

Product Data Sheet

Screen Printing Ink

Vitrocure SVC

UV-curing Screen Ink Range, 2-Component

APPLICATION

SVC inks are organic UV-curing screen inks for printing on glass containers such as drinking glasses, ceramic glass or glass bottles.

To obtain a good adhesion and best possible resistance properties container glass has to be flame-treated with suitable equipment prior to printing. Uvitro® or Pyrosil® are reliable processes for this treatment. In these processes a small percentage of organic silanes is mixed with the burner gas. Please note that the flame treatment will remove the cold end coating already applied on glass bottles. Because of the variety of materials and different parameter of pre-treatment it is essential to carry out pre-trials to confirm suitability.

PROPERTIES

- Solvent-free UV-curing screen printing inks SVC have a high reactivity.
- SVC inks are processed as 2-component ink with adhesion promoter.
- Heat treatment of prints 120°C/10 min. is recommended after UV-curing to obtain best possible resistance properties.
- The cured ink film exhibits a high mechanical abrasion resistance, good chemical resistance as well as water and dishwasher resistance (For details please refer to section "Resistances").
- SVC screen inks are suitable for indoor and short-term outdoor applications.
- SVC screen inks are formulated for printing on quick running screen equipment for glass container printing.

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 12 colour shades for mixing of RAL, PMS and HKS colours.
- Special products: Etch imitations and frosted glass effects upon request.
- 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 SVC ink range contain pigments with a medium 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.

Screen printing inks SVC are not weather resistant. They are suitable for indoor and short-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks SVC are not supplied in a ready-to-print adjustment.
- 2-component screen printing inks SVC have to be mixed with adhesion promoter at a specified ratio prior to processing.
- After addition of adhesion promoter, the ink is ready-to-print and can be processed within a set period of time (= pot life).
- If necessary and depending on local conditions, addition of further agents/additives is possible.
- Prior to printing, the inks should be stirred well to obtain a homogeneous dispersion of all ingredients.

AUXILIARY AGENTS

Application	Product	Addition in % by weight	Additional Information
Thinning	Additive UV/V*	Max. 10%	Standard thinner
Viscosity increase	Thickening powder	1 - 2%	Stir with mixer
Matting	Matting powder	5 - 10%	Stir with mixer
Reactivity increase	LAB-N 551564	3 - 5%	Photoinitiator
Flow agent	Additive UV/VM	1 - 2%	Do not overdose!
	Additive UV/N	1 - 2%	Wetting agent, also promotes flow properties.
Adhesion promoter	SVC/H	5 %	Note: Pot life!
Hardener	Additive UV/H	5 %	For coated surfaces (Note: Pot life!)

* Thinner Additive UV/V is a reactive UV monomer, not a commercial solvent!

OVERPRINTING

Generally, it is not necessary to overprint SVC inks with varnish.

BRONZE COLOURS, MIXING OF BRONZE INKS

The following bronze colours with a stable shelf life are available upon request:

- Silver: SVC/79
- Gold: rich gold SVC/75 and rich pale gold SVC/76

DRYING / UV-CURING

- SVC inks only dry/cure under UV-radiation. We recommend additional oven curing 120°C/10 Min. after UV-curing to achieve very high resistance values.
- Suitable UV-driers with Hg medium-pressure lamps (250 – 400 nm) and an efficiency between 80 and 200 W/cm have to be used.
- Preferably, use reflectors with a focussed radiation.
- Ensure an even radiation (intensity/distance to the lamps) of the whole printed image.
- Curing parameter depend on thickness of printed ink layer, colour, substrate or substrate quality and temperature as well as construction and performance of the UV drier.
- Curing energy required depends on number of printed ink layers (check intermediate adhesion), printed layer thickness, colour and type of substrate. Hence, printers should determine the exact required energy with their own UV-drier.
- **UV-curing energy guide values:**
(printed with 150-31 fabric, on transparent glass)
UV-energy: approx. 250 - 300 mJ/cm²
(measured with Kühnast UV-integrator, 250 – 410 nm, max. 365 nm)
Belt speed: **UV-radiator:** 1 x 120 W/cm: 10 – 15 m/min.
2 x 120 W/cm: 20 – 30 m/min.
- **Note: Overprinting of several ink layers:**
SVC inks are formulated for fast screen equipment for glass container printing. Multicolour motives with overlapping ink layers should be printed "inline" in one pass on multicolour printing equipment with a corresponding number of inking units/print stations.
- Adhesion should only be checked several minutes after curing. Due to the post-curing process of the ink and depending on the substrate, sufficient adhesion may sometimes only be achieved after up to 24 hours.

Adhesion Promoter / Hardener:

SVC inks are adjusted with adhesion promoter SVC/H prior to printing.

Note. SVC/H reacts with humidity. Therefore, re-close containers tightly as soon as possible. Otherwise, the adhesion promoter may become unusable. Do not use any adhesion promoter which has gelled or turned solid.

- **SVC and SVC/H** are mixed at a ratio of **20 : 1** (= addition 5%) (parts by weight)

Note: For applications on coated surfaces Additive UV/H (addition 5%) instead of SVC/H may be required.

Pot life:

- Ink mixed with adhesion promoter SVC/H (or hardener Additive UV/H) may only be processed within a limited period of time (=pot life)
- **Pot life of SVC with SVC/H (or Additive UV/H) is approx. 4 - 6 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.

Adhesion Promoter or Hardener Reaction

Basically, the resistance properties of the ink are only achieved after UV curing by a further chemical cross linkage reaction between ink, hardener and substrate. This cross linkage reaction depends on time and temperature (reaction time).

After UV curing, prints should be stored for at least 24 hours, better 72 hours at room temperature > 20°C.

Resistance Tests

Resistances should not be checked before prints have cooled down and ink has fully cured/cross-linked, at the earliest after 24 hours.

SCREEN FABRIC / STENCILS

SVC inks are formulated for printing with fabrics of 120 – 150 threads/cm. Printability and especially UV-curing properties with coarser or finer fabrics should be evaluated by corresponding trials.

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

CLEANING

Uncured UV inks can be removed from stencils and tools using our solvent based universal cleaning agents of the URS range.

Cleaning of cured UV inks is very time-consuming and hardly ever possible.

Note: As the acrylates contained in these UV inks may cause skin irritation, clean contaminated skin with water and soap immediately. Remove and clean contaminated clothing straightaway.

PACK SIZE

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

SHELF LIFE

In closed original containers, SVC inks generally have a shelf life of 1 year from date of production.

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 UV-Curing Screen Printing Inks

Brochures: UV-Curing Screen 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.

COLOUR SHADES

C-MIX 2000 BASE COLOUR SHADES					
LL pigmentation with medium light fastness					
Mixing system for matching of PMS, HKS, RAL colours (on white substrates)					
Start formulations available in data base „UV packaging printing C-MIX 2000“					
According to colour card C-MIX 2000-LL					
primrose	SVC/Y34	red	SVC/R54	green	SVC/G50
golden yellow	SVC/Y54	magenta	SVC/M50	black	SVC/N50
orange	SVC/O54	violet	SVC/V50	white	SVC/W50
scarlet	SVC/R24	blue	SVC/B50	varnish	SVC/E50
STANDARD Colour Range, HD (highly opacity)					
yellow, highly opaque	SVC/10-01HD	green, highly opaque	SVC/40-02HD		
red, highly opaque	SVC/21-03HD	white, highly opaque	SVC/60-HD		
blue, highly opaque	SVC/30-02HD	black, highly opaque	SVC/65HD		
SPECIAL PRODUCTS: Special Colour Shades, Vanishes, Pastes					
Information about availability upon request					
silver, stable shelf life	SVC/79	Upon request:			
rich gold, stable shelf life	SVC/75	etch imitations			
rich pale gold, stable shelf life	SVC/76	matt varnishes			
4 COLOUR PROCESS INKS (CMYK)					
According to colour card STANDARD 1 for screen printing inks					
Upon request					

Matching of PMS, RAL, NCS colours and 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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Coates Screen Inks GmbH
 Wiederholdplatz 1 90451 Nürnberg
 Tel.: 0911 6422 0 Fax: 0911 6422 200
<http://www.coates.de>