

Product Data Sheet

Screen Printing Ink

SunChemical[®]
Coates Screen Inks

UVU-vc-Free

UV-curing Screen Ink Range, 1-Component

APPLICATION

UV-curing screen printing inks UVU offer many application possibilities, mainly for graphic screen printing applications.

They can be used for printing on rigid PVC, PVC adhesive foils, polystyrene (PS), ABS, polycarbonate (PC), PET-G, paper and cardboard. In addition, they are suitable for printing on PMMA (acrylic glass) substrates with slightly reduced ink adhesion properties.

With addition of 5% additive PP/UVU screen inks UVU can also be printed on PP foils and PP double wall sheets.

PROPERTIES

- Solvent-free UV-curing screen printing inks UVU have a high reactivity.
- UVU inks are delivered in a ready-to-print adjustment with medium viscosity. They cure quickly resulting in a glossy finish.
- The cured ink film shows medium flexibility and good mechanical abrasion resistance.
- Further processing such as cutting, punching, creasing should be carried out as soon as possible after printing as flexibility of the ink film will decrease after curing.
- UVU inks show a good weather resistance.
- Note: Substrate PVC: Due to the variety of PVC materials, especially plasticized PVC, we strongly recommend pre-tests (adhesion, impact strength and tear resistance) to determine suitability of UVU inks. Ink series UVX2 is an alternative with constant flexibility.
- Note: Substrate PP: If exposed to humidity (e.g. rain, fog) UVU prints on PP materials show reduced scratch and adhesion resistance. Damp prints should not be exposed to mechanical influences (scratching, rubbing, creasing). After complete drying, the prints will largely recover their original resistance. For outdoor applications on PP substrates with highest requirements, we recommend our ink series UVPO.

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 12 colour shades for mixing of RAL, PMS and HKS colours.
- Process Inks: "180" colours 4 transparent colour shades according to ISO 2846-4.
- 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 UVU 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 screen printing inks UVU are suitable for outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks UVU are supplied in a ready-to-print adjustment. Generally, addition of auxiliary agents is not necessary.
- For some rare and special applications and depending on local conditions, addition of certain 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	1 - 3%	Photoinitiator
	LAB-N 560700	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	PP/UVU	5%	Stir with mixer

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

OVERPRINTING

Generally, it is not necessary to overprint UVU inks with varnish. If required, however, overprinting with varnish UVU/E50-VC-Free is possible.

BRONZE COLOURS, MIXING OF BRONZE INKS

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

- Silver: UVU 79/291
- Gold: rich gold UVU 75/32 and rich pale gold UVU 76/67

Printers can mix bronzes themselves using bronze pastes B 75, B 76, B 77 and B 79 as well as bronze powder B 78-POWDER.

These "B" bronze pastes and "B" bronze powder are mixed with varnish UVU/E50-VC-Free prior to processing.

Mixing ratios in parts by weight:

Gold bronze paste/powder	to	UVU/E50-VC-Free	=	1 : 3 - 4
Silver bronze paste	to	UVU/E50-VC-Free	=	1 : 4 - 5

- **Note:** For technical reasons these mixtures only have a pot life of approx. 6 - 8 h! Afterwards ink will thicken and become solid.
- **Note:** B bronzes are prone to oxidation (Exception B 78-POWDER). Therefore, overprinting with UVU/E50-VC-Free is recommended.
B 78-POWDER does not tend to oxidation. The pale copper shade will not darken with time.

DRYING / UV-CURING

- UVU inks only dry/cure under UV-radiation.
- 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, white substrate)
UV-energy: **150-250 mJ/cm²**
(measured with Kühnast UV-integrator, 250 – 410 nm, max. 365 nm)
Belt speed: **UV-radiator: 1 x 120 W/cm: 15 - 20 m/min.**
2 x 120 W/cm: 30 - 40 m/min.
- 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.

SCREEN FABRIC / STENCILS

UVU inks are formulated for printing with fabrics of 120 – 165 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 UVU are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, UVU 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					
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	UVU/Y30-VC-Free	red	UVU/R50-VC-Free	green	UVU/G50-VC-Free
golden yellow	UVU/Y50-VC-Free	magenta	UVU/M50-VC-Free	black	UVU/N50-VC-Free
orange	UVU/O50-VC-Free	violet	UVU/V50-VC-Free	white	UVU/W50-VC-Free
scarlet	UVU/R20-VC-Free	blue	UVU/B50-VC-Free	varnish	UVU/E50-VC-Free
4 COLOUR PROCESS INKS (CMYK)					
According to colour card STANDARD 1 for screen printing inks					
process yellow	UVU 180-VC-Free	process black	UVU 65-VC-Free		
process magenta	UVU 181-VC-Free	transparent paste	UVU/TP-VC-Free		
process cyan	UVU 182-VC-Free				
4 COLOUR PROCESS INKS (CMYK), DIA-ADJUSTMENT FOR BACKLIT PRINTS					
Process colours with increased density					
process yellow	UVU 180/98-Dia-VC-Free	process cyan	UVU 182/98-Dia-VC-Free		
process magenta	UVU 181/98-Dia-VC-Free	process black	UVU 65/641-Dia-VC-Free		
SPECIAL PRODUCTS: Special Colour Shades, Vanishes, Pastes					
Information about availability upon request					
white, highly opaque	UVU 60/HD-VC-Free				
white, highly opaque	UVU 60/719-HD-PP-VC-Free	for especially difficult substrates			
black, highly opaque	UVU 65/HD-PP-VC-Free	for especially difficult substrates			
silver	UVU 79/291	Stable shelf life			
rich gold	UVU 75/32	Stable shelf life			
rich pale gold	UVU 76/67	Stable shelf life			

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.

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