

# Product Data Sheet

## Screen Printing Ink

# 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/cm<sup>2</sup>**  
(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 2 years 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 to produce 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](http://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.

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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