

Product Data Sheet

Screen Printing Ink

UVFG

UV-curing Screen Ink Range, 2-Component

APPLICATION

For printing on sheet glass (furniture decoration) and technical applications.

When printing on glass a clean, dust and grease-free surface is always essential. Therefore, always clean/degrease glass materials thoroughly prior to printing.

This ink range was especially developed for printing on sheet glass. For glass containers NVTGL is recommended.

PROPERTIES

- Solvent-free UV-curing screen printing inks UVFG have a high reactivity.
- The cured ink film exhibits very high mechanical abrasion resistance and good chemical and water resistance.
- Due to the binders screen printing inks UVFG are not suitable for outdoor applications.
- Note on multi-layer printing:
The very high level of cross-linkage of the cured and chemical resistant ink film of UV ink may affect intermediate adhesion. Compared to other UV-curing screen inks UVFG inks can be overprinted within a period of approx. 72 hours.
- Note on water resistance:
Water resistant adhesion on glass is achieved by a complex interaction of the components and therefore also depends on the type of glass material. If the required resistances can be achieved should be confirmed by carrying out accurate pre-trials. Any change or deviation of the processing parameter may influence the result, especially in reference to water resistance.

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 12 colour shades for mixing of RAL, PMS and HKS colours.
- 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 UVFG 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.

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ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks UVFG are not supplied in a ready-to-print adjustment.
- 2-component screen printing inks UVFG have to be mixed with hardener at a specified ratio prior to processing.
- 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.

Hardener:

- **UVFG inks have to be adjusted with 5% hardener UVFG/H prior to processing.**
- Hardener should be mixed into the ink thoroughly using a suitable mixer.
- Hardeners are sensitive to humidity. Therefore, containers always have to be tightly closed.

Pot life:

Ink mixed with hardener may only be processed within a limited period of time (=pot life)

- **Pot life of UVFG with UVFG/H is approx. 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.

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.

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

OVERPRINTING

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

BRONZE COLOURS, MIXING OF BRONZE INKS

Bronze colours with a stable shelf life are available upon request.

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 UVFG/E50 prior to processing.

Mixing ratios in parts by weight:

Gold bronze paste/powder	to	UVFG/E50	=	1 : 3 - 4
Silver bronze paste	to	UVFG/E50	=	1 : 4 - 5

- **Note:** Depending on printing conditions, an addition of 2% photoinitiator LAB-N 560700 may be required to increase reactivity.
- **Note:** For technical reasons these mixtures only have a pot life of approx. 4 - 8 h! Afterwards ink will thicken and become solid.
- **Note:** B bronzes are prone to oxidation (Exception B 78-POWDER). Therefore, overprinting with UVFG/E50 is recommended.
B 78-POWDER does not tend to oxidation. The pale copper shade will not darken with time.

DRYING / UV-CURING

- UVFG inks only dry/cure under UV-radiation. When processing 2-component UVFG with addition of hardener we recommend oven curing 140°C/20 Min. after UV-curing to rapidly achieve high water 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.
- UVFG inks require medium energy values for UV curing.

UV-curing energy guide values:

(printed with 120-34 fabric, on transparent glass)

UV-energy: approx. 300 – 500 mJ/cm²

(measured with Kühnast UV-integrator, 250 – 410 nm, max. 365 nm)

Belt speed: **UV-radiator:** 1 x 120 W/cm: 2 – 3 m/min.
2 x 120 W/cm: 4 – 6 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.

Hardener Reaction

- Irrespective of the quick photo-reactive UV-curing the chemically reactive hardener UVFG/H requires a reaction time of at least >72 h/20°C to achieve a complete cross-linkage.

Resistance Tests

Resistances, especially water and chemical resistance of UVFG prints should not be checked before the inks have completely cross-linked/cured, i.e. >72 hours.

SCREEN FABRIC / STENCILS

UVFG 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 UVFG are delivered in 1 and 5 kilo containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, UVFG inks generally have a shelf life of 1 year from date of production. Hardener UVFG/H has a shelf life of 12 months 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	UVFG/Y30	red	UVFG/R50	green	UVFG/G50
golden yellow	UVFG/Y50	magenta	UVFG/M50	black	UVFG/N50
orange	UVFG/O50	violet	UVFG/V50	white	UVFG/W50
scarlet	UVFG/R20	blue	UVFG/B50	varnish	UVFG/E50
SPECIAL PRODUCTS: Special Colour Shades, Vanishes, Pastes					
Information about availability upon request					
white, highly opaque	UVFG 60/HD	Upon request:		bronzes, stable shelf life etch imitations 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>