

Product Data Sheet

Screen Printing Ink

86UV

(preliminary information)

UV-curing Screen Ink Range, 1-Component, Low-Migration

APPLICATION

Screen printing inks 86UV is a universal ink series for the decoration of plastic containers and plastic tubes made of pre-treated (flame) polyethylene PE and polypropylene (PP), PVC and other plastics. Furthermore, only low-migration raw materials are used in 86UV, which is why 86UV can be described as a low-migration ink.

PROPERTIES

- Solvent-free UV-curing screen printing inks 86UV have a very high reactivity and contain silicones.
- 86UV inks are delivered in a ready-to-print adjustment and show high viscosity which enables processing at higher temperatures.
- They cure quickly resulting in a high-gloss finish. Initial adhesion is excellent. Prints show good adhesion and high chemical resistance.
- 86UV is formulated for medium running screen printing equipment for container printing.
- To obtain proper ink adhesion on PE and PP plastics, pre-treatment, preferably with flame, is imperative. Efficiency of pre-treatment also must be adjusted to the printing cycles.
- 86UV inks can be cured with conventional UV Hg lamps as well as with UV LED technology.
- 86UV inks are suitable for indoor and short-term outdoor applications.
- Further UV ink ranges for printing on PE/PP plastic containers:
 - 80UV: Medium viscosity, contains silicones
 - 81UV: Higher viscosity than 80UV, contains silicones
 - 833UV-SF: Optimized for printing on tubes, UV-LED curable, silicone-free.
 - 852UV: Low migration. Higher viscosity than 80UV.

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 12 colour shades for mixing of PMS, HKS and RAL colours.
- Process Inks: 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 86UV ink range contain pigments with 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.

86UV inks are suitable for indoor and short-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks 86UV are supplied in a ready-to-print adjustment. An addition of auxiliary agents is not recommended as this may have a negative effect on migration properties.
- An addition of hardener is possible to increase adhesion properties.

AUXILIARY AGENTS

Application	Product	Addition in % by weight	Additional Information
Viscosity increase	Thickening powder	1 - 2 %	Stir with mixer
Matting	Matting powder	5 - 10%	Stir with mixer
Hardener	Z/H	5%	Stir with mixer (observe pot life)

OVERPRINTING

Generally, it is not necessary to overprint 86UV inks with varnish. If required, however, overprinting with varnish 86UV/E50 is possible.

DRYING / UV-CURING

- 86UV inks only dry/cure under UV-radiation.
- Suitable UV-driers with Hg medium-pressure lamps (250 – 400 nm) and an efficiency between 120 and 200 W/cm have to be used.
- Preferably, use reflectors with a focussed radiation. UV LED lamps with a wavelength of 395 nm and an output $\geq 16\text{W/cm}$ are suitable, as well.
- 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: **approx. 150-200 mJ/cm²**
(measured with Kühnast UV-integrator, 250 – 410 nm, max. 365 nm)
- **Printing speed: up to 60 cycles/min.** (with container printing equipment)
- **Note: Overprinting of several ink layers:**
Due to the high reactivity and cross-linkage of the ink, it is possible to print with high cycle speeds. However, there is only a small period of time for safe overprinting (intermediate adhesion) of previously printed ink layers. Therefore, 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.

Hardener:

Alternately, screen inks range 86UV can be processed as 2-component ink with **hardener Z/H** to achieve better adhesion on difficult substrates. Addition of hardener Z/H, which acts as adhesion promoter, however, will only increase chemical resistance of 86UV to a limited extent.

86UV and hardener Z/H are mixed at a ratio of **ink : hardener = 20 : 1** (parts by weight).

Hardeners are sensitive to humidity. Therefore, containers always must be tightly closed.

Pot life:

- Ink mixed with hardener may only be processed within a limited period of time (=pot life)
- **Pot life of 86UV + hardener 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.

Hardener Reaction

Basically, the increased adhesion properties influenced by the hardener are only achieved by a further chemical cross linkage reaction between ink and hardener. This cross-linkage reaction depends on time and temperature (reaction time). After UV curing, prints should be stored for at least 24 hours at a temperature $> 15^{\circ}\text{C}$.

Resistance Tests

Resistances should not be checked before the ink has fully cured/cross-linked, 24 hours after UV curing at the earliest.

SCREEN FABRIC / STENCILS

86UV inks are formulated for printing with fabrics of 120 – 150 threads/cm. Printability and especially UV-curing properties with coarser 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 86UV are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, 86UV 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 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: www.coates.de, Service & Support, Technical Articles

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	86UV/Y30	red	86UV/R50	green	86UV/G50
golden yellow	86UV/Y50	magenta	86UV/M50	black	86UV/N50
orange	86UV/O50	violet	86UV/V50	white	86UV/W50
scarlet	86UV/R20	blue	86UV/B50	varnish	86UV/E50
STANDARD COLOURS, HIGHLY OPAQUE					
Upon request					
SPECIAL PRODUCTS: Special Colour Shades, Vanishes, Pastes					
Information about availability upon request.					
Upon request					
4 COLOUR PROCESS INKS (CMYK)					
According to colour card STANDARD 1 for screen printing inks					
Upon request					

Matching of PMS, HKS, 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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