Product Data Sheet
Screen Printing Ink

SunChemical®
a member of the DIC group
Color & Comfort

80UV

UV-curing Screen Ink Range, 1-Component

APPLICATION

Screen printing inks 80UV are used for decorating plastic containers made of pre-treated polyethylene (LD-PE, HD-PE) and polypropylene (PP) such as cartridges, cans, bottles, tubes, etc.

PROPERTIES

- Solvent-free UV-curing screen printing inks 80UV have a very high reactivity.
- 80UV inks are delivered in a ready-to-print adjustment and show medium viscosity. They cure quickly resulting in a high-gloss finish. Prints show good adhesion and high chemical resistance.
- 80UV is formulated for fast 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 high printing cycles.
- 80UV inks are suitable for indoor and short-term outdoor applications.
- More UV ink ranges of the 80UV group for printing on PE/PP plastic containers:
  81UV: Higher viscosity than 80UV.
  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: ”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 80UV ink range contain pigments with 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.

80UV inks are not weather resistant. They are suitable for indoor and short-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks 80UV 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.
Hardener	Additive UV/H	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 80UV inks with varnish. If required, however, overprinting with varnish 80UV/C50 is possible.

BRONZE COLOURS

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

- Silver: 80UV 79/Standardsilber (fine grain size)
  80UV 79/325 (slightly coarser grain size)
- Gold: gold colours according to Pantone PMS C upon request.

DRYING / UV-CURING

- 80UV 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.
- 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. 100 mJ/cm²**
  (measured with Kühnast UV-integrator, 250 – 410 nm, max. 365 nm)
  Printing speed: **up to 100 cycles/min.** (with container printing equipment)
- **Note: Overprinting of several ink layers:**
  Due to the very 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:
Alternatively, screen inks range 80UV can be processed as 2-component ink with **hardener Additive UV/H** to achieve better adhesion on difficult substrates**.** Addition of hardener Additive UV/H, which acts as adhesion promoter, however, will only increase chemical resistance of 80UV to a limited extent.
80UV and hardener Additive UV/H are mixed at a ratio of **ink : hardener = 20 : 1** (parts by weight).
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 80UV + 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 72 hours at a temperature > 15°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
80UV inks are formulated for printing with fabrics of 140 – 190 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 80UV are delivered in 1 and 5 litre containers. Other pack sizes are available upon request.

SHELF LIFE
In closed original containers, 80UV 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

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	80UV/Y34	red	80UV/R54	green	80UV/G50
golden yellow	80UV/Y54	magenta	80UV/M50	black	80UV/N50
orange	80UV/O54	violet	80UV/V50	white	80UV/W50
scarlet	80UV/R24	blue	80UV/B50	varnish	80UV/E50

4 COLOUR PROCESS INKS (CMYK)

According to colour card STANDARD 1 for screen printing inks

process yellow	80UV 180	process black	80UV/N50
process magenta	80UV 181	transparent paste	80UV/E50
process cyan	80UV 182		

SPECIAL PRODUCTS: Special Colour Shades, Vanishes, Pastes

Information about availability upon request.

white, highly opaque	80UV 60/788	overprint varnish	80UV/C50
silver, stable shelf life	80UV 79/Standardsilber	relief varnish	80UV 70/825-THIX-
silver, coarse grain size stable shelf life	80UV 79/325	fluorescent colours	according to Pantone PMS C
gold colours, stable shelf life	according to Pantone PMS C		

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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