

Product Data Sheet

Screen Printing Ink

SunChemical[®]
Coates Screen Inks

UV-650018

UV-curing Screen Ink Range, 1-Component

APPLICATION

Screen ink series UV-650018 is mainly used for decorating moulded plastic parts, writing utensils and cosmetic products (cream jars, mascara sleeves) made of ABS and polycarbonate (PC).

After plasma-treatment also suitable for printing on moulded polypropylene (PP) parts (possibly with addition of hardener Additive UV/H).

PROPERTIES

- Solvent-free UV-curing screen printing inks UV-650018 have a high reactivity.
- UV-650018 inks are delivered in a ready-to-print adjustment with medium viscosity. They cure quickly resulting in a rigid and glossy finish. The cured ink film shows good mechanical abrasion resistance and high chemical resistances.
- UV-650018 inks are formulated for the decoration of small materials in high quantities on fast-running one and multi-colour screen printing equipment.
- UV-650018 inks are suitable for indoor and medium-term outdoor applications.
- We also offer a UV-LED curable modification of UV-650018: Screen Ink Range UV-650063.

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 12 colour shades for mixing of RAL, PMS and HKS colours.
- Opaque: Standard HD Highly opaque colour shades.
- 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 UV-650018 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 UV-650018 are suitable for medium-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks UV-650018 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

AUXILIARY AGENTS (Continued)

Application	Product	Addition in % by weight	Additional Information
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 (pot life)

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

OVERPRINTING

Generally, it is not necessary to overprint UV-650018 inks with varnish. If required, however, overprinting with varnish UV 70/555-650018 is possible.

BRONZE COLOURS, MIXING OF BRONZE INKS

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

- Silver: UV 79/134-650018
- Gold: rich pale gold UV 76/43-650018

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 UV 70/555-650018 prior to processing.

Mixing ratios in parts by weight:

Gold bronze paste/powder to UV 70/555-650018 = 1 : 3 - 5

Silver bronze paste to UV 70/555-650018 = 1 : 5 - 7

- **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 UV 70/555-650018 is recommended.
B 78-POWDER does not tend to oxidation. The pale copper shade will not darken with time.

DRYING / UV-CURING

- UV-650018 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: 150-200 mJ/cm²

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

Belt speed: **UV-radiator:** 1 x 120 W/cm: 15 - 22 m/min.

2 x 120 W/cm: 30 - 44 m/min.

Typical speed for printing on containers (cans, tubes and cartridges) printing e.g. cream jars (cosmetics) is 60 to 80 cycles/min.

- **Note regarding multi-layer printing on one-colour equipment:**

Because of the high reactivity and level of cross-linking of the ink, intermediate adhesion may be affected by the "waiting time" between printing passes. In most cases, this can be avoided by adjusting (reducing) UV curing energy when curing the lower ink layer(s). However, this must be determined in pre-trials. At the same time, you have to confirm if the prints still meet the resistance requirements.

- 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 UV-650018 can be processed as 2-component ink with **hardener Additive UV/H**. Addition of hardener Additive UV/H, which mainly acts as adhesion promoter, however, will only increase chemical resistance of UV-650018 to a limited extent.

UV-650018 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 UV-650018 + 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 after photochemical UV curing 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

UV-650018 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 UV-650018 are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, UV-650018 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 substrate) Start formulations available in data base „Formula Management C-MIX 2000“ According to colour card C-MIX 2000 Note: These UV-650018 colours do not have the original C-MIX 2000 colour codes.			
primrose (Y30)	UV 10/20-650018	violet (V50)	UV 37/23-650018
golden yellow (Y50)	UV 11/80-650018	blue (B50)	UV 30/154-650018
orange (O50)	UV 15/38-650018	green (G50)	UV 44/33-650018
scarlet (R20)	UV 20/38-650018	black (N50)	UV 65/407-650018
red (R50)	UV 21/161-650018	white (W50)	UV 60/438-650018
magenta (M50)	UV 25/19-650018	varnish (E50)	UV 70/555-650018
STANDARD COLOURS (high opacity)			
primrose, highly opaque	UV 10/41-HD-650018	blue, highly opaque	UV 30/215-HD-650018
yellow, highly opaque	UV 11/128-HD-650018	green, highly opaque	UV 40/146-HD-650018
orange, highly opaque	UV 15/73-HD-650018	white, highly opaque	UV 60/594-HD-650018
red, highly opaque	UV 21/177-HD-650018	black, highly opaque	UV 65/569-HD-650018
SPECIAL PRODUCTS: Special Colour Shades, Varnishes, Pastes			
Information about availability upon request			
gloss varnish	UV 70/555-650018	relief varnish	UV 70/554-650018
matt varnish	UV 70/636-MT-650018	transparent paste	UV/TP-23-650018
4 COLOUR PROCESS INKS (CMYK)			
According to colour card STANDARD 1 for screen printing inks			
Upon request			
BRONZE COLOURS (ready-to-print, stable shelf life)			
According to Colour Card UV-Metallic-Effects			
rich pale gold	UV 76/43-650018	silver	UV 79/134-650018

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.

January 2021 - Version B3

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