

Product Data Sheet

Screen Printing Ink

SunChemical®
Coates Screen Inks

UVN 96 Phosphorescent Inks

UV-curing Special Screen Ink Colours, 1-Component

APPLICATION

Special phosphorescent screen ink colours based on ink range UVN for printing on rigid and plasticized PVC, coated polyolefin and polyester foils.

PROPERTIES

- UVN 96 colour shades are translucent, solvent-free UV-curing screen printing inks with a high reactivity.
- Phosphorescent colours retain incident UV-radiation and short-wave luminous energy in a range of 350 to 450 nm (maximum excitation), which is then emitted as long-wave luminescence in the dark.
- The duration of the phosphorescent effect mainly depends on pigment type used, pigment content and the printed layer thickness.
- Two UVN 96 phosphorescent colours are available:
UVN 96/39 – pigmentation for prints with long-term phosphorescent effect.
UVN 96/46 – pigmentation for short-term phosphorescent effects, e.g. advertising applications.
- UVN 96 colours have a very high pigment content. In addition, thick layers are required to obtain longest possible duration of the phosphorescent effect. They are generally printed with coarse to very coarse fabrics ranging from 43 – 77 threads/cm, if necessary multiple-layers. Long-term phosphorescence according to DIN 67510 is possible with UVN 96/39, provided they are processed correctly.
- Due to these high layer thicknesses and required UV-curing, the suitability of thin substrates, such as PVC self-adhesive foils or rigid PVC, thickness < 300µ has to be confirmed by corresponding pre-trials.
- The phosphorescent pigments used for these special colours have a high specific gravity. Therefore, inks should be stirred well prior and during processing (e.g. when re-filling the screen). These pigments are very rigid and abrasive, therefore stirring with a dissolver with a plastic disc is recommended.
- UVN 96 prints are lightfast, however, due to their pigmentation they are sensitive to humidity and contamination of the surface. For long-term use prints should be overprinted, e.g. with varnish UVN/E50. (apply with 120-34 thread/cm fabric). With this protective coating prints show good weather resistance.
- Note: As this colour range has very specific properties and applications are quite complex, pre-tests to confirm printing properties, compatibility of ink and substrate as well as the required phosphorescent effect are absolutely essential.

COLOUR SHADES - OVERVIEW

- Phosphorescent Colours: 2 different colour shades, see detailed table in section Colour Shades.

CHOICE OF PIGMENTS AND LIGHT FASTNESS

UVN 96 colours contain pigments with a high light fastness. Applied on suitable substrates and overprinted with a protective varnish they are suitable for outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Special screen printing inks UVN 96 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 |
| 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 UVN 96 phosphorescent inks with varnish. If required, however, overprinting with varnish UVN/E50 is possible.

BRONZE COLOURS, MIXING OF BRONZE INKS

Not applicable.

DRYING / UV-CURING

- UVN 96 colour shades 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 77-48 fabric, white substrate)
UV-energy: 200-300 mJ/cm²
(measured with Kühnast UV-integrator, 250 – 410 nm, max. 365 nm)
Belt speed: UV-radiator: 1 x 120 W/cm: 10 - 15 m/min.
2 x 120 W/cm: 20 - 30 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

UVN 96 colours are formulated for printing with fabrics of 43 – 77 threads/cm. For applications such as rotary printing (e.g. labels) with motives requiring a minor phosphorescent effect, fabrics up to 120 threads/cm can also be used. 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 colours UVN 96 are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, UVN 96 colours 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"

COLOUR SHADES

| Phosphorescent Colour Range UVN 96 | |
|--|-----------|
| Phosphorescent ink, high pigmentation, yellow-greenish, very long phosphorescent effect. Prints with long-term phosphorescence according to DIN 67510 are possible. | UVN 96/39 |
| Phosphorescent ink, high pigmentation, yellow-greenish, only short-term phosphorescent effect. Suitable for applications such as advertising. | UVN 96/46 |

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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