



955LED-LM series



Technical data sheet

UV screen printing inks

1. APPLICATION FIELDS:

Universal, low-migration, radical curing, silicone-free and glossy UV screen printing ink for LED curing intended to print on plastic hollow bodies made of polyolefins, in particular tubes made of polyethylene.

Substrates may differ regarding their surface properties (heat treatment) or method of manufacture. A suitability test must therefore always be carried out before printing.

2. CHARACTERISTICS:

The UV screen printing ink cures under LED radiation as well as under conventional UV curing (Hg-, Fe-doped).

The inks of the **955LED-LM** series are:

- Low-migration, correspond to the "Nestlé Guidance Note on Packaging Inks" - Version 08-2016
- Correspond to the positive list 1A of the EuPIA Suitability List of Photoinitiators and the requirement of the Swiss Department of Home Affairs on consumer goods (SR 817.023.21) for the outside printing of food packaging
- Formulated to be ITX, Benzophenone and 4-Methylbenzophenone (4MBP) free and free from Bisphenol A
- Free from toxic elements
- Silicone-free, barium-free and almost odourless
- Very reactive, even at high machine speeds
- Very good spreading properties
- High opacity and colour brilliance thanks to optimised pigment wetting and ideal base colour composition
- Good solvent and water resistance
- Excellent filling material resistance after 48 hours
- Crush-resistant

The inks of the **955LED-LM** series are particularly recommended for printing food and cosmetic packaging.

A special product suitability test prior to any kind of further processing is required.

3. RANGE OF COLOURS:

The basic ink mixing system consists of 11 basic colours and one blend.

Field-proven mixing formulas according to current colour shade patterns, e.g. Pantone®, HKS, RAL, NCS, etc., are available.

3.1 Basic colours:

Yellow	D01	955LED2193LM
Yellow	D02	955LED2194LM
Orange	D03	955LED3370LM
Red	D04	955LED3371LM
Red	D05	955LED3372LM
Pink	D06	955LED3373LM
Violet	D07	955LED5426LM
Blue	D08	955LED5427LM
Green	D09	955LED6162LM
White	D11	955LED1057LM
Black	D12	955LED9084LM
Clear Base	D0	955LED0085LM

3.2 High opacity formulations:

White (high opacity)	955LED1056LM
Print black	955LED9080LM

3.3 Euro-Colours / 4-Colour Process Printing Inks:

4-Colour Process Inks are available for screen printing in accordance with DIN 16538.

Process-Yellow	955LED2204LM
Process-Magenta	955LED3397LM
Process-Cyan	955LED5438LM
Printing Black	955LED9085LM
Raster Paste	955LED0094LM

3.4 Additional products:

Overprint varnish	955LED0084LM
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3.5 Adhesion modifier:

To meet particularly high resistance requirements, we recommend adding adhesion modifiers. Please note that the processing time (pot life) of the ink mixed with adhesion modifier is 4-8 hours at 21 °C depending on the colour hue. Higher processing temperatures shorten the pot life.

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Overprinting must take place within 12 hours at 21 °C in case an adhesion modifier is added.

Adhesion modifier (max. addition 4 %) 100VR1259

4. ADDITIVES:

The use of thinners and curing accelerators impedes the LM characteristics of the ink. It is recommended that with a low migration requirement, no additional additives are used.

Thinners containing solvents must not be used, as there is a risk of equipment damage and/or risk of explosion

4.1 UV thinner:

The inks of the 955LED-LM series are ready for printing.

In special cases, UV thinner may be added to adjust the viscosity. To increase reactivity, we recommend adding the reactive thinner.

UV thinner (max. addition 2-5%) 955LED0014LM
Reactive thinner (max. addition 2-5%) 955LED0086LM

4.2 Levelling agent:

The levelling of the ink surface can be optimised by the use of a levelling agent. With the help of this additive, pin-holes can be reduced or eliminated.

Levelling agent (max. addition 0.5-1 %) 100VR1408

If you use more than 1%, the adhesion between the individual ink layers is impaired.

5. PROCESSING INSTRUCTIONS:

Due to the high reactivity, direct daylight should be avoided.

5.1 Pre-treatment:

To ensure proper adhesion, polyethylene (PE) or polypropylene (PP) are pre-treated by flame treatments or CORONA discharge. The surface tension should be at least 42 mN/m for PE and 52 mN/m for PP.

5.2 Stencils / printing equipment:

Thanks to the favourable deep curing capabilities, a higher opacity can be achieved by sufficient curing, in particular with mesh 120-31. Screen print meshes between 120-31 and 165-27 F/cm are generally suitable for printing.

Suitability testing prior to printing is always recommended. Inks of the 955LED-LM series can be used with all screen-printing machines with screen printing stencils commonly used for industrial applications.

As a squeegee material, products which are resistant to acrylic esters are to be used.

5.3 Curing conditions:

The inks of the 955LED-LM series were formulated for LED lamps (radiation intensity: at least 8 W/cm²) with a wave length of **395 nm**. Conventional UV lamps (Hg- or Fe-doped) may be used as an alternative (power 160-200 W/cm).

The 955LED-LM series has favourable curing properties and is suitable for printing speeds >100 tubes/min. depending on colour hue, lamp configuration, fineness of the mesh and the thickness of the applied ink film.

Please note that low radiation intensity, excessive machine speed or excessive film thickness have a negative influence on the curing, adhesion and migration properties of the printing ink.

Uncured prints are considered hazardous waste. We therefore recommend curing all misprints under the lamp. After curing they can be safely transported to a disposal site and burned.

6. Preparations for printing with silicone-free inks:

Before silicone-free inks are used for printing, the entire equipment including dosing syringes, pump hoses (automatic ink feed), containers, squeegees, squeegee holders, ink blades and screens have to be cleaned very thoroughly using alcohol, e.g. isopropyl alcohol.

Screens which were cleaned in a washing machine have to be cleaned again manually beforehand to remove any existing ink residues of inks containing silicone to prevent contamination by silicone.

The inks should be stirred well before use.

7. CLEANING:

Screens, squeegees and other equipment can be cleaned using the RUCO screen cleaner 32335.

If cleaning is not performed by fully automatic cleaning equipment, personal protective equipment is mandatory.

Universal cleaner 32335
Cleaner for cleaning equipment 100VR1240C
Biodegradable cleaner 100VR1272

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8. SHELF LIFE:

A shelf life of at least 12 months is guaranteed when the inks are stored at 21 °C in their original container. Higher storage temperatures or open containers reduce the shelf life.

9. PRECAUTIONS:

UV inks may cause skin irritation and increase the sensitivity of the skin, which leads to hypersensitivity. Disposable gloves and protective goggles are strongly recommended in the interest of the user's health. For further information, please refer to the safety data sheet, the information sheet on the use of UV inks by the *Verband der Druckfarb-
nindustrie* [association of the printing inks industry] and the information sheet on the use of UV inks by the professional association. The latter is available here:

Berufsgenossenschaft Druck und Papierverarbeitung,
Rheinstr. 6-8, D-65185 Wiesbaden, order number 205.

If you have any further technical questions, please contact our Product Management.

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