# SERIES 905UV-LM

**Technical Data Sheet** **UV Screen Printing Ink**

## 1. APPLICATION FIELDS:

Universal low-viscous, **silicone-free, low-migration** UV screen printing ink for printing on plastic film, especially in rotary screen printing, applicable for:

- Polyolefins like Polyethylene (PE), Polypropylene (PP)
- TC Polyethylene (PE)
- TC Polypropylene (PP)
- TC Polyester
- PVC and other plastic films
- Coated paper and coated cardboard

Substrates may differ in their chemical structure or method of manufacture.
A test for suitability must always be carried out before printing. Antistatic, Mould Release Agents and Slip Additives may have negative effects on adhesion and should be detected and removed prior to printing.

## 2. CHARACTERISTICS:

The inks of series 905UV-LM show the following features:

- Low-migration comply with the current ”Nestlé Guidance Note on Packaging Inks“
- In accordance with positive list 1A of the EuPIA Suitability List of Photoinitiators as well as the specifications of the Swiss EDI Ordinance on Consumer Goods (SR 817.023.21) for inks applied to the non-food contact surface of food packaging
- Free from ITX, benzophenone, 4-methylbenzophenone (4-MBP) as well as formulated free from Bisphenol A
- Low viscosity, for universal use on a wide range of substrates
- Very good flow characteristics
- High opacity and colour brilliance by optimal pigment wetting and ideal basic colour shades composition
- Good solvent and water resistance
- Excellent filling resistance after 48 hours
- The inks series is suited especially for combination printing with UV flexo printing inks

The inks of series 905UV-LM are especially recommended for printing on exterior food packaging.

The migration behaviour depends on many manufacturing process parameters, such as curing conditions, ink application and substrate, and thus has an influence on conformity. Therefore we recommend having a specimen certified by an independent testing laboratory.

## 3. RANGE OF COLOURS:

The basic ink mixing system consists of 11 basic colours and may be used for the mixing of a wide colour shade range. Field proven mixing formulations exist for Pantone®, HKS, RAL, NCS, etc.

### 3.1 Basic Colours:

| | | |
|---|---|---|
| Yellow | M01 | 905UV20170LM |
| Yellow | M02 | 905UV20171LM |
| Orange | M03 | 905UV31529LM |
| Red | M05 | 905UV31530LM |
| Pink | M06 | 905UV31531LM |
| Violet | M07 | 905UV51607LM |
| Blue | M08 | 905UV51608LM |
| Green | M09 | 905UV60694LM |
| White | M11 | 905UV1460LM |
| Black | M12 | 905UV9360LM |
| Varnish | M 0 | 905UV0333LM |

### 3.2. High opaque products:

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| Opaque white | 905UV1484LM |

### 3.3 Combination with other ink systems:

Specially matched **low-migration** systems for label printing are ensuring highest safety in the printing of food and cosmetic packaging.

**<u>UV Flexo printing inks</u>**

**Series UVFX-LM**
Low viscosity, silicone-free, high opaque, hot stamping
High opacity and colour brilliance through optimized pigment composition

**Opaque White UVFX-1059LM**
Low viscosity, silicone-free, high opaque, hot stamping

**<u>UV Screen printing lacquers:</u>**

**960UV494LM Tactile lacquer**
Low tactile 50 – 100µm, transparent, flexible, gluing, hot stamping

**960UV480LM High gloss**
Viscosity approx. 100s, gluing, hotfoil stamping

**960UV481LM Matt**
Viscosity approx. 140 s., partly gluing and hotfoil stamping, good slip properties

**960UV488LM Satin matt**
Viscosity approx. 45 s., partly gluing and hotfoil stamping, good slip properties

## 4. ADDITIVES:

### 4.1 Thinner:

The inks of the 905UV-LM series are ready to use.

If further viscosity reduction is desired, UV thinner may be added. In order to increase curing, the addition of reactive thinner is recommended.

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| UV Thinner | (max. addition 2-5 %) | 905UV0014LM |

*The use of thinner and curing promoter affect the low-migration properties of the ink. For low-migration requirements it is recommended to not to use any additives. Sol-vent based thinners are not allowed to use due to the risk of equipment damage or danger of explosion.*

### 4.2 Leveling Agent:

The leveling of the surface can be optimized by using levelling agent.

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| Leveling agent | (addition 1 – 2%) | 900UV-VM |

*The use of thinner and curing promoter affect the low-migration properties of the ink. For low-migration requirements it is recommended to not to use any additives. Solvent based thinners are not allowed to use due to the risk of equipment damage or danger of explosion.*

### 4.3 Adhesion Modifier:

In the case of particularly high resistance and low-migrations requirements the addition of adhesion modifier is recommended. However the addition of adhesion modifier to UV curable ink will lead to a processing time (potlife) of 8 hours at 21°C depending on the colour shade. Higher processing temperatures will result in a shorter potlife.
Overprinting must take place within 12 hours at 21°C in case an adhesion modifier is added.

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| Adhesion Modifier | (max. addition 2-4 %) | 1000VR1491 |

## 5. PROCESS INSTRUCTIONS:

### 5. 1 Pre-treatment:

Pre-treatment of polyolefins (PE/PP) must be performed by CORONA-discharge in order to insure the adhesion of the UV screen printing ink to the substrate. In case of PE, surface tension needs to be at least 42 mN/m (Dynes/cm), in case of PP at least 48 mN/m (Dynes/cm).

### 5.2 Stencils / Printing Equipment:

Suitable mesh types are: RotaMesh® RM 305/17%, RM 305/13% and RotaPlate® 305 S or mesh type Screeny® KM and KS or S-Line® RSS which are used on rotary screen printing machines.

Any acrylic acid ester resistant squeegee material may be used.

### 5.3 Curing conditions:

The ink series **905UV-LM** can be cured by the use of medium pressure mercury vapour lamps at least 120 W/cm.

The optimum energy output is 120 - 140 Millijoule/cm$^2$, measured by UVScale measuring system from Fujifilm.
UV curing is followed by a 48 hour post-cure phase after which the ink film is fully cured and has its final properties.
However, it must be noted, that low radiation intensity, excessive machine speeds or excessive film thickness can have a negative influence on the curing properties and adhesion.
Un-cured prints are considered a hazardous waste. Therefore, it is recommended to cure misprints under the UV lamp as a matter of principle.
After curing, spoilage can be disposed by conventional methods and may be incinerated without causing any difficulties.

### 5.4 Preparation for printing with silicone-free inks:

When printing with silicone free inks, we must take into consideration that equipment like pumps, syringes, containers, squeegees and screens have to be silicone free.

Therefore they have to be cleaned with alcohol for example isopropanol.

Screens from washers / automated screen cleaning equipment muss be cleaned by hand prior to using to
Insure, that no silicone contamination / residue is left remaining on the screen.

***Before printing, we recommend to stir the ink!***

## 6. CLEANING:

Screens and squeegees as well as other operating materials can be cleaned with the RUCO screen cleaner 34622.
The cleaning has to be done carefully and separate from the cleaning of silicon added inks. Any contamination by silicone has to be carefully avoided.
If cleaning is not performed by fully automatic cleaning equipment, protective gloves must be worn. Cleaning liquids that are contaminated with UV products should not be used for the washing of working materials that were used with conventional screen printing inks.

Solvents that contain UV residue are not suitable for reclamation and must be treated as a separate waste.

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| Universal Cleaner | 34622 |
| Cleaning agent for cleaning equipment | 100VR1442 |

## 7. SHELF LIFE:

A shelf life of **9** months is guaranteed when storing the inks at 21°C and in the original packing container. At higher storage temperatures the shelf life will be reduced.

## 8. PRECAUTIONS:

UV inks may cause irritations and can increase the sensitivity of the skin, possibly leading to hypersensitivity. Therefore, the use of disposable gloves and protective goggles is strongly recommended.

For further information on the safety, storage and environmental aspects concerning these products, please refer to the Material Safety Data Sheet (MSDS).

Additional technical information may be obtained from our staff of the Technical Application Department.

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