



SERIES 985UV

Technical Data Sheet

UV screen printing inks

1. APPLICATION FIELDS:

Universal UV screen printing ink for the printing of blow moulded objects and foils, suitable for substrates made of pre-treated polyolefins, polyethylene (PE), polypropylene (PP), PVC and other plastic types as well as for printing on paper and 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:

This high gloss UV ink series is very reactive in nature, assuring good curing and adhesion even when printing at high machine speeds.

The inks of the 985UV series are constitutionally free from toxic elements and solvents.

The inks of this series feature good solvent and water resistance after 12 hours.

This ink series is *not* suitable for printing onto food packaging.

3. RANGE OF COLOURS:

The basic ink mixing system consists of 12 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:

| | | |
|---------------|------|-----------|
| Light Yellow | G 1* | 985UV2251 |
| Medium Yellow | G 2 | 985UV2252 |
| Orange | G 3* | 985UV3443 |
| Light Red | G 4* | 985UV3444 |
| Red | G 5* | 985UV3445 |
| Pink | G 6 | 985UV3446 |
| Violet | G 7 | 985UV5487 |
| Blue | G 8 | 985UV5488 |
| Green | G 91 | 985UV6714 |
| White | G 11 | 985UV1071 |
| Black | G 12 | 985UV9072 |
| Clear Base | | 985UV0007 |

*The above colours are also available in extremely light-fast versions having a value of > 7 on the blue wool scale (1-8).

3.2 Special Products:

3.2.1 Light-fast Formulations:

| | | |
|--------------|------|-----------|
| Light Yellow | G 25 | 985UV2513 |
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|-----------|------|------------|
| Orange | G 31 | 985UV3999 |
| Light Red | G 41 | 985UV30001 |
| Red | G 51 | 985UV30000 |

3.2.2 High Opacity Formulations:

| | | |
|-------|----------------|-----------|
| White | (high opacity) | 985UV1125 |
| Black | (high opacity) | 985UV9157 |

3.2.3 Special product:

| | |
|----------------|-----------|
| Printing Black | 985UV9137 |
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3.3 Euro-Colours / 4-Colour Process Printing Inks:

For 4-colour process printing according to DIN 16538, 4 Euro-basic colours are available:

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|-----------------|-----------|
| Process-Yellow | 985UV2271 |
| Process-Magenta | 985UV3501 |
| Process-Cyan | 985UV5416 |
| Halftone Black | 985UV9140 |

For additives see "Additional Products"

3.4 Fluorescent Colours:

| | | |
|-------------|---------------|------------|
| Neon Cyan | Pantone 801 C | 985UV51186 |
| Neon Green | Pantone 802 C | 985UV60450 |
| Neon Yellow | Pantone 803 C | 985UV20087 |
| Neon Orange | Pantone 804 C | 985UV31559 |
| Neon Red | Pantone 805 C | 985UV31190 |
| Neon Pink | Pantone 806 C | 985UV31576 |

4. ADDITIONAL PRODUCTS:

When printing 4-colour process halftones, the transparent paste (reactive to UV light) can be used to reduce the colour density of the process colours. Raster paste can be added to reduce "Dot Gain" and to achieve sharper dots.

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|-------------------|---------------------|-----------|
| Printing Lacquer | | 985UV0054 |
| Transparent Paste | (max. addition 10%) | 985UV0124 |
| Raster Paste | (max. addition 10%) | 985UV0012 |

5. ADDITIVES:

5.1 UV-Thinner:

The inks of the 985UV 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.

In general, no solvent-based thinners should be used due to flammable nature of the solvents.

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| UV-Thinner | (max. addition 2-5%) | 985UV0014 |
| Reactive-Thinner | (max. addition 2-5%) | 985UV0010 |

SERIES 985UV

5.2 Adhesion Modifier:

In the case of particularly high resistance 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 4-8 hours at 21°C depending on the colour shade. Higher processing temperatures will result in a shorter pot life.

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

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| Adhesion Modifier | (addition 2%-4%) | 100VR1491 |
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5.3 Levelling Agent:

The levelling of the ink surface can be optimised by the use of a levelling agent.

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| Levelling Agent | (max. addition 0.5-1%) | 100VR1297 |
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6. PROCESSING INSTRUCTIONS:

6.1. Pre-treatment:

Pre-treatment of polyolefins (PE/PP) must be performed by Flame Treatment or 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 52 mN/m (Dynes/cm).

6.2 Stencils / Printing Equipment:

Screen printing meshes between 140-34 threads/cm and 200-34 threads/cm are suitable for printing with UV inks. The colour mixing formulations are based on a 165-34 threads/cm mesh. However, test prints and approval of the colour are generally recommended for the respective print jobs. The 985UV series can be used with all screen-printing machines with screen printing stencils currently used for industrial applications. Any acrylic acid ester resistant squeegee material may be used.

6.3 Curing Conditions:

The varying UV absorption of the individual colours results in a range of curing properties depending on colour and opacity. All colours of the 985UV series can be cured by the use of medium pressure mercury vapour lamps (at least 160 W/cm).

The optimum energy output is 250 - 300 Millijoule/cm². UV curing is followed by a 12 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.

7. CLEANING:

Screens and squeegees as well as other working materials can be cleaned with the RUCO screen cleaner 32335. 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.

| | |
|--------------------------------|------------|
| Universal Cleaner | 32335 |
| Cleaner for cleaning equipment | 100VR1240C |
| Bio degradable Cleaner | 100VR1272 |

8. SHELF LIFE:

A shelf life of 12 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.

9. 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 Product Management Department.

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