

1. APPLICATION FIELDS:

UV screen printing ink for the printing of blow moulded objects, especially cartridges, suitable for substrates made of pre-treated polyethylene (PE), polypropylene (PP), polyamide and other plastic types.

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 990 UV series are constitutionally free from toxic elements and solvents. The raw materials used meet with the limits stipulated by the EEC regulation EN 71 (Safety of toys), part 3 (Migration of Certain Elements) of December 1994. The inks of this series will exhibit good solvent and water resistance after 12 hours.

3. RANGE OF COLOURS:

The basic colour 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. (see 6.2).

3.1 Basic colours:

Light Yellow	G 1	990 UV 2071
Medium Yellow	G 2	990 UV 2072
Orange	G 3	990 UV 3073
Light Red	G 4	990 UV 3074
Red	G 5	990 UV 3075
Pink	G 6	990 UV 3076
Violet	G 7	990 UV 5077
Blue	G 8	990 UV 5078
Green	G 91	990 UV 6750
Brown	G 10	990 UV 8080
White	G 11	990 UV 1081
Black	G 12	990 UV 9082
Clear Base		990 UV 0007

3.2 Special Products:

3.2.1 High Opacity Formulations:

White	(high opacity)	990 UV 1133
Black	(high opacity)	990 UV 9233

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

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

Euro-Yellow	990 UV 2313
Euro-Magenta	990 UV 3617
Euro-Cyan	990 UV 5636
Halftone Black	990 UV 9180

For additives see "Additional Products"

3.4 Bronze Colours:

see separate "Bronze Colours" leaflet

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.

Transparent Paste	(max. add.: 10%)	990 UV 0124
Raster Paste	(max. add.: 10%)	990 UV 0012

5. ADDITIVES:

5.1 Thinner:

The inks of the 990 UV 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

UV Thinner	(max. add. 2-5%)	990 UV 0014
Reactive Thinner	(max. add. 2-5%)	990 UV 0010

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 potlife.

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

Adhesion Modifier	(max. add.: 2 %)	HV 100 VR 1259
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990 UV SERIES

5.3 Levelling Agent:

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

Levelling Agent (max. add.: 0,5-1 %) VM 100 VR 133

6. PROCESSING INSTRUCTIONS:

6.1. Pre-treatment:

Pre-treatment of polyolefines (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 180-34 threads/cm mesh. However, test prints and approval of the colour are generally recommended for the respective print jobs. The 990 UV 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 990 UV 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 100 VR 1185.

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	UR	1185
Cleaner for cleaning equipment	WR 100 VR	1240C
Bio degradable Cleaner	BR 100 VR	1272

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 Technical Application Department.

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