

UltraRotaScreen UVSF



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UV screen printing ink for Corona pre-treated or top-coated polyethylene (PE) and polypropylene (PP), self-adhesive foils, top-coated polyester PET foils, PVC and paper labels

Silicone-free, high gloss, very fast curing, good opacity, high chemical resistance, for UV rotary screen printing with cylindrical screen printing stencils from Gallus Screeny® and Stork Screens Rotamesh®

Field of Application

Substrates

UltraRotaScreen UVSF is a universal and highly resistant UV rotary screen printing ink, suitable for the following substrates:

- PE, PP self-adhesive foils, Corona pre-treated or top-coated
- polyester PET foils, top-coated
- PVC, paper labels

For PE foils, we generally recommend high-frequency Corona pre-treatment to increase the surface tension to at least 42-44 mN/m. PP foils should exhibit surface tensions of at least 48 mN/m after high-frequency Corona pre-treatment for optimum wetting and adhesion of the UV screen printing ink.

Since the print substrates mentioned may be different in printability, due to lower surface tensions even within an individual type, preliminary trials are essential to determine suitability for the intended use.

Field of use

UltraRotaScreen UVSF is silicone-free and has been developed particularly for UV rotary screen printing with cylindrical printing stencils from Gallus Screeny® or Stork Screen Rotamesh® used in label printing with modern hybrid/combination printing machines.

Owing to the silicone-free adjustment of UVSF, the receptivity of flexo, offset, or letterpress inks when overprinted or pre-printed as well as of thermotransfer has clearly been im-

proved. All UVSF colour shades can further be embossed with suitable hot stamping foils.

UVSF 173, UVSF 174, and UVSF 179 whites are best suited as an opaque and full-area basic layer for combination labels over-printed with UV flexo printing inks on transparent foils.

UVSF is suited for printing speeds of up to 65 m/min. Preliminary trials prior to printing are indispensable.

Low migration Opaque White UVSF 174

Opaque White UVSF 174 is especially suited for printing onto the non food-contact surface of food packaging. Its contents fully comply with the EuPIA Photoinitiator Suitability List 1A as well as the Ordinance on Material and Articles in Contact with Food (SR 817.023.21.).

We nevertheless recommend a migration test with the finished product due to the fact that migration is strongly influenced by parameters like curing conditions, thickness of the printed ink film, and characteristics of the substrate.

UVSF 174 may be used, by an appropriate printing process, to print onto the non food-contact surface of any material or article intended to come into contact with foodstuffs. However, full compliance with the regulation (EC) Nr. 2023/ 2006 must be ensured. In case of any queries please contact our Marabu product safety department directly.

UltraRotaScreen UVSF



Characteristics

Ink characteristics

In regard of viscosity and rheology, all UltraRotaScreen UVSF colour shades are press-ready, high-glossy, and brilliant at a best possible opacity. All shades can be embossed with suitable hot stamping foils.

The high glossy opaque whites UVSF 173, UVSF 174, and UVSF 179 exhibit a high opacity as well as a very high homogeneous flow for solid areas and exact dot reproduction when printing finest motifs or letters.

The printed and totally polymerised ink film has a high chemical and mechanical resistance and offers a good flexibility for die-cutting by means of flat bed or rotary tools.

Adjustment and handling of the ink

UltraRotaScreen UVSF is press-ready. However, please stir well before printing.

For a possible decrease in viscosity of the ink, Thinner UVV 5 (1 – 6%) can be used.

For the silicone-free UVSF, it is important to use only thoroughly cleaned stencils, squeegees, ink pumps, as well as tubes (in the case of an automatic ink supply), and injectors for the manual ink filling of the stencil, etc.

If cleaning is carried out with automatic screen washing systems, we recommend prior to printing an additional manual cleaning with a fresh cleaner not having had any contact with ink residues containing silicone.

It is essential that a silicone contamination is avoided! If ink flow problems may nevertheless arise, please clean once more stencil and squeegee with a fresh cleaner.

To avoid a disturbing orange peel structure in the printed ink film, it is to ensure that the ink level in the stencil must be rather high.

Curing

UVSF is a very fast curing UV rotary screen printing ink. A UV drying unit with one or two medium pressure Mercury Vapour Lamps (capacity 150-200 W/cm) cures all colour shades at a web speed of 25 - 65 m/min.

Generally, the hardening speed of the ink depends on the type of UV dryer (reflector), number, age and capacity of the UV tubes, printed ink film thickness, colour shade, substrate, and belt speed of the UV dryer.

UltraRotaScreen UVSF is a post-curing UV ink. The ink film should pass a tape test after exiting the curing unit and cooled to room temperature.

It achieves its maximum chemical and physical resistance (e.g. abrasion resistance) after 24 h due to the given post-curing process of radically curing UV printing inks.

Fade resistance

Pigments of low to high fade resistance are used for UVSF. This means that an outdoor use is generally not recommended. Highly fade-resistant shades are available on request.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch, and block resistance, and is highly resistant to solvents, alcohol, finger sweat, water, and other usual fillers.

Range

Basic shades

970	White	980	Black
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Further colour shades

173	Opaque White	180	Opaque Black
174	Opaque White low migration		
179	Opaque White		

UltraRotaScreen UVSF



UVSF 173 Opaque White

High efficient and less expensive opaque white compared to UVSF 172, but with an adhesion reduction on difficult materials.

- high gloss finish
- high opacity
- web speed up to 65 m/min.
- excellent homogeneous ink flow characteristics
- best possible degree of whiteness

UVSF 174 Opaque White (low migration)

Especially suited for printing onto the non food-contact surface of food packaging.

- high gloss finish
- high opacity
- web speed up to 65 m/min
- excellent homogeneous ink flow characteristics
- best possible degree of whiteness

Thinners must NOT be used for UVSF 174, since otherwise the suitability for food packaging is at stake. When using Thickening Agent STM we nevertheless recommend a migration test with the finished product if any auxiliaries are being used.

UVSF 179 Opaque White

Low-priced white compared to UVSF 173, but with an adhesion reduction on difficult materials.

- optimal price/performance ratio
- glossy finish
- opaque
- web speed up to 80 m/min.
- normal degree of whiteness

UVSF 180 Opaque Black

Opaque Black with high opacity and a deep degree of black for speeds of up to 65m/min .

All shades are intermixable. To maintain the special characteristics of this outstanding ink

range, UVSF should not be mixed with other ink types either containing silicone or free of it.

The pigments used in the above mentioned standard shades, based on their chemical structure, correspond to the EEC regulations EN 71/ part 3, safety of toys - migration of specific elements.

We **do not recommend** printing onto labels for toys due to possible direct mouth contact as we cannot exclude the potential content of unpolymerized monomers and reduction products of photoinitiators even if the ink is totally cured.

Additives

UVSF 904 Special Binder

- as a binder for bronze pastes
- to extend the ink
- to accelerate curing

An addition of UVSF 904 (1-15% parts by weight) accelerates the curing speed of colour shades and reduces opacity at the same time. UVSF 904 **cannot** be recommended as a printing varnish since its transparency is not sufficient.

UVSF 910 Print Varnish

High-glossy and transparent overprint varnish for the varnishing of labels.

Bronzes

Various bronze pastes are available which can be mixed with UVSF 904. They can be chosen according to the required opacity, cost limit, visual impression, and curing characteristics.

Bronzes

12-16 h pot life, good opacity

S 191	Silver	4:1 - 7:1
S 192	Rich Pale Gold	4:1 - 7:1
S 193	Rich Gold	4:1 - 7:1

UltraRotaScreen UVSF



Low-priced, slightly structured Bronze Pastes

6 months pot life, fair opacity

S-UV 191	Silver	4:1 - 7:1
S-UV 192	Rich Pale Gold	4:1 - 7:1
S-UV 193	Rich Gold	4:1 - 7:1

High-gloss fine pigmented Bronzes

Long pot life, excellent opacity

S-UV 296	High-gloss Silver	6:1-9:1
S-UV 297	High-gloss Rich Pale Gold	6:1-9:1
S-UV 298	High-gloss Pale Gold	6:1-9:1

Due to the reduced rub resistance, an overprint with UVSF 910 is recommended.

High Opacity 'Metallic' Bronzes

Slightly structured, excellent rub resistance, max. 12h pot life

S-UV 291	High-gloss Silver	4:1 - 10:1
S-UV 293	High-gloss Rich Gold	4:1 - 10:1

All figures in brackets are guidelines which can be changed according to opacity and curing speed. The ratio figures in brackets refer to the mixture Bronze Binder UVRS 910 to bronze paste whereas the first figure is standing for the parts by weight of Bronze Binder UVRS 910.

Auxiliaries

UVV 5 Thinner

Addition: 1 - 6 % parts of weight

Due to its low viscosity, UVSF is press-ready and does not require any further adjustments prior to printing. If necessary, however, or in the case of printing bronze shades, 1-6 % of Thinner UVV 5 can be added to all UVSF shades except UVSF 174.

UVV 5 is bonded chemically in the ink film during UV-curing. If an excessive amount has been added, however, curing speed may be reduced and the ink film will remain soft and tacky.

Thinner UVV 6

Addition: 1 - 5 % parts of weight

Thinner for reducing the ink's viscosity if used on fast running printing machines. An excessive addition of thinner may cause a reduction in curing speed, as well as in surface hardness of the printed ink film. UVV 1 is chemically bound in the ink film when UV-cured. **NOT suitable for UVSF 174!**

Thickening Agent STM

Addition: 0.5 - 2 % parts by weight

Auxiliary to enhance the ink's viscosity without significantly influencing the degree of gloss. Please stir well, the use of an automatic mixing machine is recommended.

Cleaning

For manual cleaning of screen printing stencils, our Cleaners UR 3 (flash point 42°C) or UR 4 (flash point 52°C) can be used.

Fabrics, stencils

UVSF has been developed for rotary screen printing meshes such as Gallus Screeny® (types KS, KM) or Stork Screens Rotamesh® (RM 305 with 17, 13 or 11% of open surface).

Mileage

Mileage is about 60-90 m² per kg ink depending on mesh and substrate selected.

Shelf life

Shelf life depends very much on the formula/ reactivity of the ink system as well as the storage temperature.

UltraRotaScreen UVSF



The shelf life for an unopened ink container if stored in a dark room at a temperature of 15 - 25 °C is:

- 1 year for Opaque White 174 (low migration)
- 1,5 years for Opaque White 173
- 2 years for all other UVSF standard products

Under different conditions (particularly higher storage temperatures), shelf life will be reduced. In such cases, the warranty given by Marabu expires.

Labelling

For our ink type UltraRotaScreen and its additives and auxiliaries there are current Material Safety Data Sheets available according to EC-regulation 1907/2006, covering in detail all relevant safety data including the labelling according to the present EC regulations as to health and safety labelling requirements. Such health and safety data may also be obtained from the respective label.

Safety rules for UV screen printing inks

UV-inks contain some substances which may irritate the skin. Therefore, we recommend to take utmost care when working with UV-curable screen printing inks. Parts of the skin dirtied with ink are to be cleaned immediately with water and soap. Please pay also attention to the notes on labels and safety data sheets.

Note

Our technical advice whether spoken, written, or through test trials corresponds to our current knowledge to inform about our products and their use. This is not meant as an assurance for certain properties of the products nor their suitability for each application.

You are, therefore, obliged to conduct your own tests with our supplied products to confirm their suitability for the desired process or purpose. The selection and testing of the ink for specific application is exclusively your responsibility. Should, however, any liability claims arise, such claims shall be limited to the value of the goods delivered by us and utilised by you with respect to any and all damages not caused intentionally or by gross negligence.