

UV Screen Printing Ink for PVC, pre-treated self-adhesive PE and PP films, Polyester films, Polystyrene, Polycarbonate, rigid PVC, Paper and Cardboard

Matt, fast curing, good opacity, high chemical resistance, versatile use

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Field of application

Substrates

Ultrastar-M UVSM (new formulation) is a matt and fast curing screen printing ink which is suitable for printing onto the below mentioned substrates:

- Self-adhesive PVC films and rigid PVC
- Polystyrene, Polycarbonate
- Paper, cardboard, corrugated board
- corona pre-treated PE and PP self adhesive films

The substrate surface must be absolutely free of disturbing residues such as grease, oil, and finger sweat.

As the mentioned print substrates may differ in their printability due to varying surface tensions even within an individual type, preliminary trials are essential to determine the suitability for the intended use.

Field of use

Ultrastar-M UVSM (new formulation) is suitable for versatile graphical and industrial screen printing applications.

When printing onto thin rigid PVC or PVC films, however, material embrittling of the printed ink film may occur (please carry out preliminary trials!).

Characteristics

Ink characteristics

All Ultrastar-M UVSM (new formulation) basic shades have a very evenly, matt appearance, as well as good opacity. The shades are not brilliant due to the matting agent.

The smell of the ink is nearly undetectable during printing, as well as after the curing process.

Ink adjustment

Ultrastar-M UVSM is press-ready but must be stirred homogeneously before printing.

Curing

Ultrastar-M UVSM is a fast curing UV-ink. A UV-curing unit with either two medium-pressure mercury lamps (80-120 W/cm) or one medium-pressure mercury lamp (120-180W/cm) cures Ultrastar-M UVSM at a belt speed of 10-25 m/min.

The curing speed of the ink is generally dependant upon the kind of UV-curing unit (reflectors), number, age, and power of the UV-lamps, the printed ink layer thickness, colour shade, substrate in use, as well as belt speed of the UV-curing unit.

Ultrastar-M UVSM is a slightly post-curing ink. The ink film must withstand a cross-cut tape test after having cooled down to room temperature. Ultrastar-M will obtain maximum chemical and rub resistance after 24h due to the post-curing process.

Fade resistance

Pigments of medium to good fade resistance are used for the Ultrastar-M UVSM range. All shades are suitable for in-and short-term outdoor use of 6 months, with reference to the middle European climate.

Ultrastar-M UVSM New Formulation



Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch and block resistance, as well as good chemical resistance to alcohol (e.g. 96% Ethanol) and customary cleaners. Ultrastar-M UVSM is only partly suitable for forming and is unsuitable for deep-drawing.

Range

Basic Shades - System Ultracolor

UVSM 922	Light Yellow	UVSM 952	Ultramarine Blue
UVSM 924	Med. Yellow		
UVSM 926	Orange	UVSM 956	Brilliant Blue
UVSM 932	Scarlet Red	UVSM 960	Blue Green
UVSM 934	Carmin Red	UVSM 962	Grass Green
UVSM 936	Magenta	UVSM 970	White
UVSM 950	Violet	UVSM 980	Black

All shades are intermixable. Mixing with other ink types must be avoided in order to maintain the special characteristics of this outstanding ink range.

(Mixtures with ink types are possible but will change the special characteristics; see chapter miscibility).

Further color shades

UVSM 180 Opaque Black

Opaque black with high opacity and a deep degree of black for printing speeds of up to 10-25 m/min. UVSM 180 is not suitable for embossing.

UVSM 181 Opaque Black

Highly reactive opaque black (10-35 m/min). If UVSM 181 is used on "stop-and-go" machines, no stripes will arise in the printed ink film due to UV-curing (important for flat bed label printing machines). Besides that, UVSM 181 shows an excellent receptivity when overprinting hot stamping and thermotransfer films. It is hereby essential (especially for printing motifs with very fine

details) that the printed UVSM ink film is not over-cured which may otherwise lead to a loss of details.

The optimum matt effect is achieved either with a 150-31 or 165-31 mesh. If coarser fabrics (e. g. 120-34) are used, the printed ink film thickness will increase and result in a reduction of the matting degree.

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.

Due to possible direct contact with the mouth, **we do not recommend** to use this ink neither for baby bottles, toys, nor for food packaging in direct touch with food since the possible presence of residual monomers and decomposition products of the photo-initiators cannot be excluded even when sufficiently cured.

When printing onto exterior packaging for food or similar goods, we recommend a migration test of the final product.

Additives

Transparent Base UVSM 409

Addition: 5 - 20% parts by weight

Thixotropic auxiliary for printing fine details, and reverse printing. By adding transparent base, the ink's density will be reduced and can be adjusted according to the print copy.

Special Binder UVSM 904

Addition: 1 - 25% parts by weight

Special Binder UVSM 904 can be used for bronzes or as extender for basic shades. An addition of Binder UVSM 904 accelerates the curing speed of colour shades reducing at the same time opacity and weather resistance at outdoor use.

Ultrastar-M UVSM **New Formulation**



Miscibility

It is possible to mix the new UVSM formulation with remaining previous UVSM formulation in order to use it up.

Ultrastar-M UVSM can be mixed with the glossy ink series Ultragraph UVAR to increase the degree of gloss. Mixtures cannot be put into storage for later use. Due to this, we recommend to prepare fresh mixes for a working time of 8 h only.

Bronzes

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)
 (Reasonable price, slightly structured, pot life approx. 12 h, low opacity)

The recommended mixing ratio can be varied according to the required opacity and curing properties.

All figures in brackets are guidelines for mixtures with UVSM 904 Special Binder while the first figure is standing for the parts by weight of UVSM 904.

Auxiliaries

Thinner UVV2

Addition: 1 - 10 % parts by weight

Thinner for the reduction of the ink's viscosity if used on fast running printing machines or when printing bronzes.

An excessive addition of thinner (>10 %) may cause a reduction of the curing speed, as well as of the printed ink film's surface hardness. UVV2 is chemically bound in the ink film when UV-cured.

Adhesion Modifier UV-HV 4

Addition: 0,5- 4 % parts by weight
 For White 970: 2 % parts by weight

UV-HV 4 improves the adhesion of UVSM on PP, as well as generally on highly cross-linked substrates or when over-printing over-cured

ink shades. The best possible adhesion and scratch resistance is achieved after 12-24 h only (preliminary trials are necessary!).

UV-HV 4 must be stirred well into the ink. Mixtures cannot be put into storage for later use, please prepare fresh mixes (to be processed within 2-4 h).

Hardener H 1

Addition: 2% parts by weight

Hardener H 1 improves the ink's adhesion to the substrate. H 1 is to be stirred well and homogeneously. The mixture UVSM and H 1 cannot be stored for a longer time and must therefore be processed within 6-8 hours.

Accelerator UV-B1

Addition: 1 – 2% parts by weight

Accelerates the curing reaction of the ink and increases the adhesion to the substrate owing to a better depth curing. The addition of UV-B1 may reduce the matt finish.

Levelling Agent UV-VM

Addition: 0,5-1,5 % parts by weight

Auxiliary to rectify flow problems (e. g. bubbles, etc.) which may be caused by residues on the substrate surface, or wrong press setting. If an excessive amount is added, intercoat adhesion may be reduced. UV-VM must be stirred well.

Thickening Agent STM

Addition: 0.5 - 2 % parts by weight

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

Ultrastar-M UVSM **New Formulation**



Cleaning

The Cleaners UR 3 (flame point 42° C) and UR 4 (flame point 52° C) are available for manual cleaning of the screen.

Fabrics & stencil

Selection of fabric depends on the printing conditions, the desired curing speed and ink mileage as well as the required opacity. Generally, fabrics of 120-34 to 180-27 can be used. A uniform screen tension (>16 N) ensures even ink layers.

UV curable inks can be processed with all commercially available stencil techniques such as capillary films (15-20µ) or solvent-resistant photo emulsions.

Mileage

Mileage of one litre ink is approximately 60-80 m² of printed surface according to mesh and substrate chosen.

Shelf life

Shelf life depends very much on the formula/reactivity of the ink system as well as the storage temperature. It is 1 year for an unopened ink if stored in a dark room at a temperature of 15-25°C. Under different conditions, particularly higher storage temperatures, the shelf life is reduced. In such cases, the warranty given by Marabu expires.

Labelling

For our ink type Ultrastar-M UVSM (new formulation) and its additives and auxiliaries, there are current Material Safety Data Sheets according to EC regulation 1907/2006 available, informing in detail about all relevant safety data including labelling according to the

present EEC regulations as to health and safety labelling requirements. Such health and safety data may also be derived 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, they shall be limited to the value of the goods delivered by us and utilized by you with respect to any and all damages not caused intentionally or by gross negligence.