

Ultraswitch UVSW



UV-curing ink for membrane switches made of coated polyester foils and polycarbonate (PC)

Glossy, good opacity, fast curing, flexible ink film, can be embossed

Vers. 04
2011
2nd Dec

Field of application

Field of use

Ultraswitch UVSW is excellently suited for the printing of front panels/membrane switches, high-quality flat key pads, as well as for further operational control panels.

UVSW is, therefore, best suited for a multi-layered ink build-up with subsequent application of adhesive and stamping of the foil.

Combinations of UV-curable and solvent-based ink systems are possible if the bottom layer is printed with UVSW followed by an overprint with a solvent-based ink system like Maraswitch MSW or Marastar SR.

Substrates

UVSW displays excellent adhesion properties onto substrates common to this segment such as coated polyester foils (PE) and polycarbonate (PC).

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.

Characteristics

UVSW is glossy, low odour, and is block-resistant. It can be used on fast running presses such as flat bed or fully automatic cylinder machines with a printing speed of up to 1200 prints/h but is also suited for manual or semi-automatic machines.

Ultraswitch UVSW excels particularly due to its outstanding printability of fine details.

Ink adjustment

Ultraswitch UVSW is press-ready but must be stirred homogeneously before printing.

Curing

UVSW is a very fast curing UV-ink. A UV-curing unit with two medium-pressure mercury lamps (120 W/cm) cure UVSW at a belt speed of 30 m/min. The highly pigmented colour shades Opaque White 170 and Opaque Black 180 need a slower belt speed of max. 20m/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.

UVSW is a slightly post-curing ink. The ink film will withstand a cross-cut tape test after having cooled down to room temperature.

Fade resistance

Depending on the colour shade, pigments of good to excellent fade resistance (blue wool scale 6-8) are used for the UVSW range. All standard shades are, therefore, suitable for outdoor use of two years, with reference to the middle European climate.

Stress resistance

After proper and thorough drying, the printed ink film exhibits outstanding adhesion as well as rub, scratch, and block resistance. Furthermore, the UVSW is suited for post-processing steps such as stamping and cutting.

Ultraswitch UVSW



UVSW is compatible with all common adhesives. After appropriate processing very high peel-off values > 15N are achieved.

For ink constructions involving an overprint with Maraswitch MSW or Marastar SR, it is essential that virtually all of the solvent residues have been eliminated from the printed ink film prior to the application of adhesives. Good pre-curing is also necessary.

Membrane switches manufactured in this way will display resistances of more than 2 million actuations according to DIN 42115.

Fabrics and stencils

All types of commercially available polyester fabrics and solvent-resistant stencils can be used. Typical mesh counts are 140-165 threads/cm.

Range

Basic Shades - System Ultracolor

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

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

The 13 basic shades according to System Ultracolor are included in our Marabu-ColorFormulator. They build the basis for the calculation of individual colour matching formulas, as well as for shades of the common colour reference systems Pantone®, HKS®, and RAL®. All formulas are stored in the Marabu-Color Manager 2 (MCM 2.4) software.

The pigments used in the below mentioned standard shades, based on their chemical structure, correspond to the EEC regulations EN 71/part 3, safety of toys - migration of specific elements. All colours are therefore suited for printing onto toys.

Further shades available

UVSW 170	Opaque White
UVSW 180	Opaque Black
UVSW 670 54 182RZ	Opaque Silver
UVSW 904	Special Binder

For printing an opaque silver layer, the silver sandwich shade UVSW 670 54 182RZ is available.

UVSW 904 Special Binder is used for an individual addition to colour shades.

Window Varnish

UVSW 912	Window Varnish, glossy transparent
UVSW 913	Window Varnish, anti-glare

Attention: UVSW 912 and 913 are silicone-free varnishes. Screen and squeegee need to be thoroughly rinsed with fresh cleaning agent prior to printing. Contaminations may result in bad flow.

UVSW 912 and 913 are not compatible with the UVSW Ultracolor Shades. For colour mixing use UVSW 904 Special Binder.

UVSW 912 and 913 feature very high chemical and mechanical resistance.

Bronze shades

UVSW 690 31 191RZ	Silver, press-ready
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Bronzes

(to be mixed with Bronze Binder UVSW 904)

S 181	Aluminium (6:1)
S 182	Rich Pale Gold (5:1)
S 183	Rich Gold (5:1)
S 184	Pale Gold (5:1)
S 186	Copper (4:1)
S 190	Aluminium, rub-resistant (6:1)

Ultraswitch UVSW



Due to the bigger pigment size of bronze pigments, we recommend a coarser fabric, e. g. 120-31. Bronze 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. By over-vernishing, it is also possible to enhance the rub resistance.

High-gloss Bronzes, Pastes

There are 8 high-gloss bronze pastes available which can be mixed with UVSW 904 Special Binder. They can be chosen according to the required opacity, cost limit, visual impression, and curing characteristics.

Bronzes with a reasonable price

(pot life 6 months, low opacity)

S-UV 191	High-gloss 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

(pot life 24h, high opacity)

S-UV 296	High-gloss Silver (8:1-10:1)
S-UV 297	High-gloss Rich Pale Gold (8:1-10:1)
S-UV 298	High-gloss Pale Gold (8:1-10:1)

The lower rub resistance can be improved by oververnishing with UVSW 904.

Highly opaque and metallic Bronzes

(slightly structured, excellent rub resistance, pot life max. 12 h)

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 UVSW 904 to bronze powder or paste whereas the first figure is standing for the parts by weight of Bronze Binder UVSW 904.

Auxiliaries

Thinner UVV 6

Addition: 1 - 5 % parts of weight

Thinner for reducing the viscosity of the ink, if used on fast running printing machines. An excessive addition of thinner will cause a reduction of the curing speed, as well as of the printed ink film's surface hardness.

UVV 6 is chemically bound in the ink film when UV-cured.

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 cure.

Cleaning

The appropriate cleaners are UR 3 (flash point 42°C) or UR 4 (flash point 52° C). We generally recommend to clean the tools immediately after printing.

Shelf life

Shelf life depends very much on the formula/reactivity of the ink system as well as the storage temperature. It is 2 years 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 Ultraswitch UVSW and its additives and auxiliaries, there are current Material Safety Data Sheets according to EC regulation 1907/2006 informing in detail about all relevant safety data including labelling accord-

Ultraswitch UVSW



ing 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.