



Coates Screen

# Product Data Sheet

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## UV-CURING SCREEN PRINTING INKS UVU

### APPLICATION

Ink type UVU is a universal and fast curing system which shows a good adhesion onto the most common substrates. It is especially suited for printing of advertising media. UV-curable UVU screen printing inks are suitable for the following substrates: rigid and flexible PVC (If foil materials with a high plasticizer content or tarpaulin foils are printed, we recommend to make pre-tests. There is the risk of foil blocking!), s/a PVC, polystyrene, ABS, PMMA, PETG, PP panels, paper & cardboard. When printing on PP substrates such as PP foils, PP corrugated boards, etc. an addition of 5% Additive PP/UVU is necessary in order to achieve a good ink adhesion. UVU is suited for a variety of graphic screen printing applications, also for long-term outdoor applications. After exposure to water and humidity (e.g. in rain, fog) UVU inks printed onto PP substrates show reduced scratch resistance and adhesion. Therefore, in this state the prints should not be exposed to mechanical stress such as scrubbing or creasing. After complete drying and after a certain time the prints get back their original resistance to a large extent. For outdoor applications on PP substrates with highest requirements we recommend our ink series UVPO.

### CHARACTERISTICS

Inks UVU are UV-curing screen printing inks with a high reactivity. After UV polymerisation they form a glossy and tack-free ink film with good abrasion resistance. UVU inks are outdoor resistant, show medium opacity and high brilliance. At first the printed ink film is flexible enough to enable a subsequent further processing (cutting, embossing and creasing). However, UVU is a post-curing ink. Therefore, printed PVC materials will lose their impact strength with time. For applications where flexibility must be maintained we recommend use of our quality UVX.

### PIGMENTS AND LIGHT FASTNESS

The pigments used for UVU inks are all free of heavy metals, thus UVU inks correspond to EN 71, safety of toys, part 3, migration of certain elements.

The pigments of the C-MIX 2000 pigmentation show good values concerning light fastness (Wool scale 7-8 according to DIN 16525) and are suited for long-term outdoor applications.

Mixed shades with blue and green may show a slight reactivity loss. This can be compensated using sensitizer additive UV/S.

### PROCESS COLOURS

Due to their high reactivity UVU process colours are suited for multi-colour printing presses. The UVU process colours for four colour halftone prints are adjusted to the Europe scale. However, due to the light fastness required for screen prints they are only an approximation. Depending on printing conditions (halftone size, mesh count, hardness, angle and sharpness of squeegee, coating etc.) the process colours can be mixed with transparent paste UVU/TP at any ratio.

As the UV-systems are free of solvents they result in high layer thickness. Therefore it is necessary to use fine fabrics and thin stencil coating. Hard squeegees and high angle squeegee positions are favourable. However the UV technology should be taken into consideration when making the films, f.e. layer thickness should be reduced using UCR or colourless ink layers.

### BRONZE INKS

For bronze prints bronze binder UVU/B can be mixed with all bronze pastes and powders B 75-B79. Mixing ratios (parts by weight) are as follows:

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Gold bronze paste: UVU/B = 1 : 3 - 5

Silver bronze paste: UVU/B = 1 : 5 – 7

Gold and silver bronzes are metal particles which could react with the pH-acidic UV components.

Therefore mixed bronze inks should be processed quickly. Depending on the bronze used oxidation reactions may cause colour changes (darker) or thickening of the mixed system due to catalytic effects.

Although the highly sensitised binders contained in UV inks are of high stability, they cannot be delivered in mixed conditions for the above reasons. As UV systems are free of solvents the MG metal gloss shades cannot be matched.

### **ADJUSTMENT FOR SCREEN PRINTING**

UVU inks come in a medium viscose ready-to-print adjustment. For fast processing printing machines the viscosity can be adjusted using thinner additive UV/V (solvent-free) or other liquid additives. All commercial powdery thickening agents are suitable.

### **AUXILIARY AGENTS**

UVU screen printing inks come in medium viscose adjustment and can be used directly from the can. If for special reasons modification of the UVU ink is required, our auxiliary agents/additives for universal use in UV inks are available. For application and addition please refer to our UV leaflet "Auxiliary Agents for UV Screen Printing Inks."

If possible, addition of auxiliary agents should be avoided as incorrect use, above all over-dosage, may cause constant and unfavourable effects to the original product properties.

### **DRYING**

Screen printing inks UVU are UV-curing and only polymerise to a stable and durable ink film under UV light of suitable wave length (high pressure mercury lamps with at least 80 W/cm; 200 W/in.).

UVU inks are highly reactive and will polymerise to a tack-free ink film even at low UV radiation.

Curing parameter depend on layer thickness, ink shade, substrate and temperature. Printed on a white substrate with a 150-31 polyester fabric (380 mesh) at room temperature drying speeds are approx. 25-30m/min with 2 radiators (80W/cm) depending on the ink shades.

This corresponds to an energy value of approx. 250-200 mJ/cm<sup>2</sup> (measured with Kühnast UV-Integrator), measured at a wave-length of approx. 250-410 nm, 365 nm at the most.

Compared to the C-MIX 2000 colours, UVU process colours are more reactive. Therefore the process colours can be used on multi-colour printing presses with considerably lower energy values or higher printing speeds.

Under suitable drying conditions the material can be stacked or processed immediately after printing.

In extreme conditions UV inks tend to over-cure. This may cause problems in further processing, mostly overprintability.

### **OVERPRINTABILITY**

Like all UV ink systems UVU inks do not require overprinting.

### **STENCILS**

All commercial stencil materials are suitable. As these inks are free of solvents and water use of all emulsions and films is unproblematic. However, because often fine fabrics are used and thin layers are required high polymer layers or capillary films should be used.

### **CLEANING**

Unpolymerized UV inks can be removed with all commercial solvent based cleaning agents of little polarity. Universal cleaning agents (URS, URS 3 etc.) are the most suitable. Removal of completely cured UV inks is time consuming and only possible using very aggressive media (decoaters).

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Contaminated skin has to be cleaned with water and soap immediately as the acrylates contained may cause irritation. Contaminated clothing has to be removed and cleaned.

**PACKING**

Screen printing inks UVU are available in 1 liter, 5 liter and 30 liter containers.

**SHELF LIFE**

For information regarding shelf life please see tin label.

**CLASSIFICATION**

Read material safety data sheets prior to processing.

The material safety data sheets according to Regulation (EC) No. 1907/2006 contain classification according to preparations directive (1999/45/EC) as well as instructions for precautions when processing, handling and storing as well as first aid.

The information given in the material safety data sheet refers to processing as described in this product data sheet.

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<b>PROCESS COLOURS ACCORDING TO EUROPE SCALE</b>			
yellow	UVU 180		
magenta	UVU 181		
cyan	UVU 182		
black	UVU 65		
<b>C-MIX 2000 BASE COLOURS</b>			
primrose	UVU/Y30	violet	UVU/V50
golden yellow	UVU/Y50	blue	UVU/B50
orange	UVU/O50	green	UVU/G50
scarlet	UVU/R20	black	UVU/N50
red	UVU/R50	white	UVU/W50
magenta	UVU/M50	varnish	UVU/E50
<b>SPECIAL INKS</b>			
transparent paste	UVU/TP		
bronze binder	UVU/B		
<b>ADDITIVES</b>			
additive for PP substrates	Additive PP/UVU		

*The statements in our product and safety data sheets are based on our present experiences, however they are no assurance of product properties and do not justify a contractual legal relationship. They serve to advise our business associates, but it is absolutely necessary to make your own printing tests under local conditions, with regard to the intended purpose prior to starting the job. - All former product data sheets are no longer valid. JUNE 2008 – VERSION No. 5*

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