



Coates Screen

# Product Data Sheet

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## UV-CURING SCREEN PRINTING INKS UVE

### APPLICATION

UV-curable UVE screen printing inks are low-cost and fast curing inks which show a good adhesion onto the most common substrates. They are especially suited for printing of advertising media. UV-curable UVE screen printing inks are suitable for paper & cardboard as well as for flexible and rigid PVC. UVE shows also good adhesion onto the different kinds of polystyrene materials.

UVE in lightfast C-MIX 2000 pigmentation is suited for a variety of indoor as well as for long-term outdoor applications. In addition, UVE is also available in LL pigmentation (limited light fastness). This low-cost alternative shows medium light fastness and is suited for indoor and short to medium-term outdoor applications with lower requirements to light fastness.

### CHARACTERISTICS

Inks UVE are UV-curing screen printing inks with a high reactivity. They are solvent-free and do not contain NVP (N-vinyl-2-pyrrolidone). After UV polymerisation they form a glossy and tack-free ink film with good abrasion resistance. UVE inks are outdoor resistant, show medium opacity and high brilliance. When printing onto rigid PVC foils use of UVE quality may result in a mayor reduction of impact strength. In that case we recommend use of qualities UVN or MULTISTAR MLS.

### PIGMENTS AND LIGHT FASTNESS

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

The lightfast 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.

The pigments of the LL pigmentation (limited light fastness) show a medium light fastness (Wool scale 5-6 according to DIN 16525) and are suited for indoor as well as for short to medium-term outdoor applications (6 – 12 months).

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

### PROCESS COLOURS

The UVE 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 UVE/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 UVE/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: UVE/B = 1 : 3 - 5

Silver bronze paste: UVE/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**

UVE 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**

UVE screen printing inks come in medium viscose adjustment and can be used directly from the can. If for special reasons modification of the UVE 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 UVE 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.).

UVE 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.

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. For best possible adhesion of multi-layer prints the first ink layers should be cured with maximum speed.

### **OVERPRINTABILITY**

Like all UV ink systems UVE 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 UVE 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	UVE 180		
magenta	UVE 181		
cyan	UVE 182		
black	UVE 65		
<b>C-MIX 2000 BASE COLOURS</b>			
primrose	UVE/Y30	violet	UVE/V50
golden yellow	UVE/Y50	blue	UVE/B50
orange	UVE/O50	green	UVE/G50
scarlet	UVE/R20	black	UVE/N50
red	UVE/R50	white	UVE/W50
magenta	UVE/M50	varnish	UVE/E50
<b>LL PIGMENTATION (LIMITED LIGHT FASTNESS)</b>			
LL primrose	UVE/Y34-LL	LL scarlet	UVE/R24-LL
LL golden yellow	UVE/Y54-LL	LL red	UVE/R54-LL
LL orange	UVE/O54-LL		
<b>SPECIAL INKS</b>			
transparent paste	UVE/TP	bronze binder	UVE/B

*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. APRIL 2008 – VERSION No. 6*

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