



Coates Screen

Product Data Sheet

UV-CURING SCREEN PRINTING INKS UVN

APPLICATION

UV-curable UVN screen printing inks are suitable for many applications. Due to the high quality raw materials used they meet highest demands. Although UVN was specifically developed for printing onto PVC, they have also shown positive results on pre-treated polyolefines, pre-treated polyester materials, polycarbonate, paper and cartons.

Due to different properties of the substrates, pre-tests are recommended.

Due to the constant further development of UVN the number of possible substrates may still increase.

CHARACTERISTICS

UVN inks are solvent free, UV-curing screen printing inks based on pre-polymerized acrylates. They do not contain NVP (N-vinyl-2-pyrrolidone). After polymerisation this system forms a glossy surface with an extremely high mechanic abrasion. If properly processed, this ink type shows long-term outdoor and chemical resistance. Overprinting is not required. This UV system shows medium opacity and very high brilliance.

PIGMENTS AND LIGHT FASTNESS

They show a light fastness of 7-8 according to wool scale (DIN 16 525). If the colour shades are reduced with high amounts of white or transparent systems light fastness might be reduced.

UVN inks also show plasticizer and solvent resistances, as far as possible with organic pigments.

UVN colour shades are free of heavy metal pigmentation and correspond to EN 71, safety of toys, part 3, migration of certain elements.

STANDARD SHADES

In order to avoid separation, mixtures with little content of black (<2%) should be made with our transparent black UVN 465.

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

PROCESS COLOURS

The UVN 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 UVN/TP at any ratio.

UVN halftone inks UVN.-HS, which are an approximation to the offset matches often used in screen printing, are also available.

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

Gold bronze paste: UVN/B	=	1 : 3 - 5
Silver bronze paste: UVN/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.

In outdoor use UV bronze inks are also subject to surface oxidation. However, much less than conventional screen printing inks. For long term outdoor use the prints should be overprinted or made with AB bronzes. UV bronze inks show better overprintability than equivalent solvent systems, however, if bronze content is high they also show adhesion problems. Due to the grind of the bronzes used, a 120-34 polyester fabric (305 mesh) or coarser fabrics should be used.

SPECIAL SHADES

Special shades of UVN inks are available in fluorescent shades (UVN 90-UVN 99), transparent inks (UVN 465 and UVN 480 – UVN 485) and various metallic adjustments (according to samples). Various special clears are also available. Furthermore phosphorescent inks UVN 96/29 and UVN 96/39 are available.

In addition all C-MIX shades are available in mat adjustment. Depending on the shade the degree is approx. 10-20% / 60° angle. The matting agents contained result in higher opacity and a slight change in colour.

ADJUSTMENT FOR SCREEN PRINTING

UVN inks come in a low viscose ready-to-print adjustment. Due to special additives contained they can be processed on flat bed and cylinder printing machines. All commercial powdery thickening agents are suitable.

AUXILIARY AGENTS

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

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. 25m/min with 2 radiators (80W/cm) depending on the ink shades.

This corresponds to an energy value of approx. 250 mJ/cm² (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 overcure. 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 UVN inks do not require overprinting. Clears used outdoors should be mixed with 5% light protection agent additive UV/LS.

UVN inks show excellent suitability for overprinting of offset materials (pretests!), overprinting of water based inks etc.

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

Unpolymerised 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).

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 UVN 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.

STANDARD SHADES			
white, highly-opaque	UVN 60/HD		
black, highly-opaque	UVN 65/226 HD		
PROCESS COLOURS ACCORDING TO EUROPE SCALE			
yellow	UVN 180		
magenta	UVN 181		
cyan	UVN 182		
black	UVN 65		
C-MIX 2000 BASE COLOURS			
primrose	UVN/Y30	violet	UVN/V50
golden yellow	UVN/Y50	blue	UVN/B50
orange	UVN/O50	green	UVN/G50
scarlet	UVN/R20	black	UVN/N50
red	UVN/R50	white	UVN/W50
magenta	UVN/V50	varnish	UVN/E50
SPECIAL INKS			
light protection varnish	UVN 70/302		
clear mat	UVN/E50-MT		
transparent paste	UVN/TP		
bronze binder	UVN/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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