

UV-curable screen printing ink

SERIES 565

Glossy UV-curing system based on highly flexible raw materials for screen printing on a wide range of plastic substrates

Substrates

The created properties of this series are without problems. The desired product qualities of this ultraviolet curing screen printing ink develop themselves on most different plastics and papers. The range of suitable substrates include pre processed polyolefines (containers, tubes, OPP laminates, corrugated sheets), PVC self adhesive films, rigid PVC, polystyrene and its descendants as ABS, SAN, etc., coated polyester films, polycarbonate, melamine resin plates, composites like e.g. DiBond and AlucoBond, modified polyesters (PET-G, PET-A, PET-GAG) coated metals, paper, board and after preliminary examination, some grades of PMMA (acrylic glass). Because of the very diversified plastic variety, the common incorporation of recycling material and a whole bandwidth of different sub-soils by same denotation are offered, pre tests of the ink suitability on the respective material is essential. of practical substrates may still increase.

Application

Area of application is a very broad spectrum of the decorative and functional printing of plastics and coatings which require high mechanical resistance but also permanent flexibility. Principally this highly flexible formulation is suitable for most thermal or cold deforming processes like 3D forming, embossing, die cutting, edge bending and punching. Serious pre tests are always vital since most plastic substrates tend to get brittle when exposed to ultraviolet radiation (for example PET-G). The application of series 565 can occur on all machine concepts e.g. flatbed- and. cylinder presses, full-or semi automatic lines down to the hand printing table. Commonly packaging materials, bottles, tubes, 3D displays, promotional novelties, back illuminated sheets and various other items for internal or external applications can be successfully produced. The smooth and glossy finish ensures an extremely high mechanical permanence and increased protection against any kind of abrasion. The low contraction inclination of the employed raw material combination allow multiple color printing of sensitive self-adhesive foils without tendency of over curing. This ultraviolet curing system is characterised in the field of membrane switches and keyboards by its highly flexible performance, suitability for cold forming and compatibility with the conventional solvent based ink ranges (series 386, 388, 655). In order to archive the highest possible flexi-

bility of the system the resistance of the cured ink film against alcohol and some other chemicals had to be compromised. For applications requiring high levels of chemical resistance the alternative use of series 588 is recommended.

Characteristics

This modern ultraviolet curing ink is naturally free from conventional solvents, contains no NVP (n-vinyl-2-pyrrolidone) and is formulated to avoid physiologically dubious materials such as TPGDA and TMPTA. Due to the high reactivity of the system the usual care related to the proper use of UV-curing products should be retained. For full details see the relevant MSD sheet.

Auxiliary Agents

Series 565 is adjusted ready for press. Because of their fine tuned flow behaviour the inks are suitable for both the printing of fine line and also block areas without change of viscosity. If modifications should yet become necessary for specific requirements the UV-thinner (series 565-017) and standard photo initiator solution (for white series 500-019 and for colors series 500-020) are available. After the addition of photo initiator solution and the increased cross linking of the resin system the overall flexibility and formability of the cured ink film can be diminished. This should always be considered before making any adjustments to the ink.

Pigments and Light Fastness

The Series 565 is free of heavy metals, monopigmented with high opaque characteristics. This advantage gives the opinion to print the most special color shades directly on transparent substrates without white pre-print. The user gets a practical range of high pigmented basic colors to cover the normal chromatic range.

Series 565-1005	MS-Light yellow
Series 565-1205	MS-Dark yellow
Series 565-2005	MS-Orange
Series 565-3005	MS-Red
Series 565-4005	MS-Violet
Series 565-4505	MS-Dark blue
Series 565-8005	MS-Black
Series 565-9005	MS-White

In addition to this opaque base colors the customer find five transparent, extremely high pigmented color shades or special mixtures and to increase sometimes the brilliance:

Series 565-1105	MS-Medium yellow
Series 565-3105	MS-Magenta red
Series 565-3305	MS-Red
Series 565-5005	MS-Blue
Series 565-6005	MS-Green

All color shades, the opaque base colors and also the transparent basic colors are high pigmented and documents in the moment the maximal optical properties and possibilities on the market.

As standard inks we offer also the high opaque qualities

Series 565-33	ST-Black
Series 565-00	ST-White

As special adjustment the user can get all base colors and individual color shades in semi-mat or mat.

The process colors for 4-color halftone prints are ready to print and follows the Europe scale:

Series 565-0950/ISO	ST-Process cyan
Series 565-0960/ISO	ST-Process yellow
Series 565-0970/ISO	ST-Process magenta
Series 565-0980/ISO	ST-Process black

and in addition the transparent bases

Series 565-04/ISO	ST-Transparent paste
Series 565-06	ST-Thixotropic paste

In this line we offer a concentrate-range to get higher density values under the names

Series 565-0955	ST-Process	cyan, strong
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Series 565-0965	ST-Process	yellow, strong
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Series 565-0975	ST-Process magenta, strong
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Series 565-0985	ST-Process	black, strong
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As standard varnishes are the systems

Series 565-05	ST-Varnish
Series 565-05/MT	ST-Varnish, mat

available and this in complement with nearly all individual specialties.

As metallic effect colors we have the standard range

Series 565-100	ST-Silver
Series 565-101	ST-Britannia silver
Series 565-103	ST-Rich pale gold
Series 565-106	ST-Copper
Series 565-02299	ST Silver coarse

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 color changes (darker) or thickening of the mixed system due to catalytic effects.

All inks of this series are non toxic and follow the Europe regulation EN 71, part 3. All pigments used in Series 565 shows a light fastness of 6-8 according to wool scale (DIN 16525). If the color shades are reduced with high amounts of white or transparent systems, light fastness might be reduced.

Curing

This highly reactive UV-curing system was developed for common Hg medium- and high pressure exciters with a minimum of 80 W/cm lamp power. For optimal curing results and to develop the required properties of the ink an energy dose of 200 – 250 mJ/cm² in a spectral band between 250 – 410 nm with a peak maximum at 365 nm must be achieved. Under this conditions multiple overprints should be possible without risk of over curing. All base colors have been formulated with a similar reactivity profile and therefore the impact of pigment absorption on the polymerisation process is very small. If under-cure is experienced with any color it is usually due to excessive ink deposit. To correct this, the mechanics such as mesh, squeegee, color density, belt speed, or the amount of UV- energy must be changed.

Stencils

As these inks are free of solvents and water, the most common emulsions and films can be used. However, because often fine fabrics are used and thin layers are required (f.e. 4-color process) high polymer emulsions or capillar films (12-15 µm) should be used.

Cleaning

Unpolymerized UV inks can be removed with all commercial solvent based cleaning agents of little polarity. UV-specific universal cleaning agents like Serie 500-URS and Serie 500-BRS are the most suitable. Removal of completely cured UV inks is time consuming and only possible using very aggressive media (decoaters).

Polluted skin must be cleaned immediately (with warm water and soap), dirty clothes must be changed.

Storage

Under normal conditions (limited change of temperature, medium temperature 20-35 °C, humidity 20-70%) we guarantee a shelf life of 12 month. For metallics be valid a storage time of 6 month.

Used containers must be stored under dark conditions without any UV-light influence. It's possible that inks from production are animate and will polymerizing in the container, because the UV-crosslinking process is a chain reaction.

Packing

Series 565 are available in 1kg and 5 kg polyethylene containers. White is also offered in 2kg PE-containers. Removed residues of ink can be supplied to the Polyolefine-recycling. Packaging containing unhardened residues of ink are subject to the special waste disposal regulations (waste disposal key (Abfallschlüssel) 55903 for Germany, waste disposal key (Sonderabfall) X(1641) for Switzerland), waste case 080302, EC (European Community).

Precautionary measures

Read material safety data sheet prior to processing.

The material safety data sheets according to OSHA form contain indication of hazardous ingredients, TLV-level and instructions for precautions when processing, handling and storing as well as first aid. The information given in the MSDS refers to processing as described in this technical leaflet. The statements in our leaflets have been made to the best of our knowledge and are given without any obligation. 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 printing job. In case of any doubts please contact our technical advisors. The application, use and processing of the products delivered by us are beyond our control. This is subject to your responsibility and there is no liability or guarantee on our part. In case of justified complaints the manufacturer can only be made liable for the countervalue of the used ink system.

Addition of not mentioned products or competitors products are on your own risk and releases Printcolor Screen Ltd. of any later demands, especially in cases of damage and loss caused by alien products.

All former leaflets are no longer valid.

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