

**UV-curing screen printing ink**

**SERIES 560 UV-MP-NV**

**High gloss, low viscosity UV-screen printing ink for decorative and functional print on plastics and different papers, based on high resistant and solvent free raw materials.**

The created properties of this series are without problems on plastics and different papers. Belong to this group of substrates you'll find PVC-self adhesive foils, rigid-PVC, polystyrene and it's modifications like ABS, SAN, pre-treated or coated polyester and polyolefines, modified PET-materials and a lot of papers and cardboard's.

This wide variety of printable materials and also the multi-farious surface properties makes it absolutely necessary for own printing tests under local conditions with regard to the intended purpose prior to starting the production.

Due to the constant further development and optimizing of Series 560 UV-MP-NV the number of practical substrates may still increase.

**Application**

Operational areas are a lot of decorative and functional applications on plastics for advertisement articles and displays with demands on high outside stabilities. Also decals and labels, lighters, ruler and pens are printed with this series. The most requirements for chemical resistances (especially against cleaning agents) and stabilities for the medium outdoor-use are accomplished through careful selection of raw materials. It is recommended to use the UV-Protection lacquer Series 560-5700 on top for a long term outdoor display. The high gloss and smooth surface gives the extreme high abrasion resistance and mechanical stability of crosslinked ink.

In case of producing membrane switches, this ink system shows good compatibility to solvent base inks like series 388, series 382 or series 386 and also excellent embossing properties

Series 560 UV-MP-NV is a low viscosity ink line for printing on high speed equipment like cylinder press or roll-to-roll.

**Characteristics**

This UV-series is free of amines and critical physiological substances like NVP, TPGDA, TMPTA and also solvents. But: Series 560 UV-MP-NV is a high reactive UV-curable system and must be supposed with the UV-typical handling in printing process. Belong to the Material Safety Data Sheet (MSDS) additional informations are available.

The very low shrinking inclination of used monomer and oligomer materials minimize the risk of overcuring so a multi-layer application is realistic under normal conditions without any problems of intercoat adhesion.

In daily practice 150-31 polyester (390 mesh) or coarser fabrics are used to get the properties like opacity, resistance and overprintability.

In all cases of UV-application, the substrate must be free of pollution's like oxidizing substances, fat, migrated additives of protection foils, lubricants of injection moulded processes and dust. Only under this conditions it's possible to get good adhesion and in correlation to this most important characteristic all other ink specifics.

**Auxiliary Agents**

Series 560 can be used directly from the can and combined rheologic properties for the full area print with very smooth surface and for the fine detail print with exact definition.

For special, individual modifications the printer can fall back on different auxiliary agents like UV-thinner, UV-initiator or wetting additives. For application and addition please refer to our UV-leaflet "Series 500: Auxiliary agents for UV-curable products". If possible, addition of additives should be avoided as incorrect use, above all overdosage, may cause constant and unfavorable effects to the original product properties.

**Pigments and Light Fastness**

*The Series 560 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 560-1005	MS-Light yellow
Series 560-1205	MS-Dark yellow
Series 560-2005	MS-Orange
Series 560-3005	MS-Red
Series 560-4005	MS-Violet
Series 560-4505	MS-Dark blue
Series 560-8005	MS-Black
Series 560-9005	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 560-1105	MS-Medium yellow
Series 560-3105	MS-Magenta red
Series 560-3305	MS-Magenta
Series 560-5005	MS-Blue
Series 560-6005	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 560-33	MS-Black
Series 560-00	MS-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 560-0950	ST-Process cyan
Series 560-0960	ST-Process yellow
Series 560-0970	ST-Process magenta

Series 560-0980	ST-Process black
and in addition the transparent bases	
Series 560-04	ST-Transparent paste
Series 560-06	Thixotropic paste
In this line we offer a concentrate-range to get higher density values under the names	
Series 560-0955	ST-Process cyan, strong
Series 560-0965	ST-Process yellow, strong
Series 560-0975	ST-Process magenta strong
Series 560-0985	ST-Process black, strong

As standard varnishes are the systems

Series 560-05	ST-Varnish
Series 560-05-MT	Varnish, mat
Series 560-07	Varnish, textured

available and this in complement with nearly all individual specialties.

For metallic effects we offer the article

Series 560-07/20	ST-Bronze varnish
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where an amount of 20 % (Rate 4:1) of Silver or Gold Bases can be mixed in.

The following metallic bases are available for mixing into the Bronze varnish:

Series 10-02299	ST-Silver coarse (ST-Shade 02299)
Series 10-02523	ST-Silver (ST-Shade 100)
Series 10-03894	ST-Rich pale gold (ST-Shade 103)
Series 10-02593	ST-Pearlescent (ST-Shade 200)

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 560 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.*

### Drying

Series 560 only polymerize to a stable and durable ink film under UV-light of suitable wave length ( high or middle pressure mercury lamps with at least 80 W/cm or 200 W/inch). Curing parameter depend on layer thickness, ink shade, substrate color and gloss, temperature. Printed directly on white or transparent materials with a 150-31 polyester fabric at room conditions an energy value of approx. 200-250 mJ/cm<sup>2</sup>, measured at a range of 250-410 nm, max. 365 nm is realistic and necessary.

Under this guideline, the Series 560 shows good overprintability, excellent adhesion and the required resistant properties. All colors have the same reactivity-level for cross-linking and only a very low inclination to overcure.

### 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 560 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).

### 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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