

**UV-curing screen printing ink**

**SERIES 520**

**High resistant UV-curable screen printing ink for functional prints on PMMA-panels**

**High gloss UV-screen printing ink for decorative and functional print on acrylic panels for household equipment, based on high resistant and solvent free raw materials.**

**Substrates**

The created properties of this series are without problems on injection moulded acrylics. As well acrylic sheet materials are suitable.

Acrylic is a polymer material with individual characteristics, so it's absolutely necessary to make own printing tests under local conditions with regard to the intended purpose prior to starting the production.

Due to the constant further development of Series 520 the number of practical substrates may still increase.

**Application**

Operational areas are many decorative and functional applications on acrylics, special for indoor use on PMMA-panels. Actual use are panels of washing machines, dish-washers, tumblers and others. All requirements for chemical resistances (special against hot suds and its vapour) and climate-stability (humidity) are accomplished through careful selection of raw materials. The high gloss and smooth surface gives the extreme high abrasion resistance and mechanical stability of crosslinked ink.

The adhesion and specially the water- and humidity-resistances are improved through addition of 3 to max. 10 weight-% of hardener Series 500-GL. The pot life is in relation to regional conditions (temperature, humidity) and quantity of addition, but always >12 hours.

**Characteristics**

This UV-series is free of amines and critical physiological substances like NVP, TPGDA, or TMPTA and also solvents. But: Series 520 is also 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 120-34 polyester (305 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 these conditions it's possible to get a good adhesion and in correlation to this most important characteristic all other ink specifications. Injection moulded materials are polymers and shows a tendency to change the material

properties, special the molecular configuration and surface tension. In this case there's a high potential of chemical instability.

**Auxiliary Agents**

Series 520 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 use different 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, the 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**

There are no basic shades, mixing shades or process colours available as most of the shades are special, tailor made products for the customer. The Series 520 is free of heavy metals (following EN 71, part 3), with high opaque characteristics.

All pigments used in Series 520 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 520 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 120-34 polyester fabric at room conditions an energy value of approx. 850-1250 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 520 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. So, a very efficient and uncomplicated process is guaranteed.

**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 be in process of crosslinking and will polymerizing in the container, because the UV-crosslinking process is a chain reaction.

### Packaging

Series 520 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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