

**Technical leaflet****1- and 2-component screen printing ink****SERIES 650****Multi purpose screen printing ink for technical and decorative applications on plastics and metals**

**High opaque, glossy screen printing ink for industrial and graphic applications on different plastics, metals and coated surfaces. 2-component screen printing ink with Jet-drying characteristics. Based on chemical resistant resins, this ink is for industrial in- and outdoor applications.**

**Substrates**

The created properties of this ink line are without problems on a wide range of different substrates such as soft and rigid PVC (no self adhesive materials), acrylics like PMMA (take care: Risk of brittleness on injection moulded materials), polycarbonate, pre-treated polyolefines (PE/PP), many lacquered and coated surfaces, also polyamide (Nylon) and different elastomers. Special on polystyrene and its modifications (ABS, SAN; etc.) the use of special thinner Series 10-0330 is recommended. In addition to this plastics it's possible to print on metals, aluminum (raw, anodized, brushed) compound materials such as Alucobond, Dibond and Vekaplan AL, wood and other natural substrates. Also useable on melamine's.

Cross hatch tests plus tape tests including fingernail test processed at 2-component (4:1 with hardener Series 600-HDA) were made upon 100 h rest phase under normal conditions.

This wide variety of printable materials and also the multifarious 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 650 the number of practical substrates may still increase

**Applications**

Operational areas are the most of decorative and functional applications on the common substrates for advertisement articles (hand out market), industrial applications like automotive industry, electronic and pharmaceutical market, packaging's, etc. The high quality raw materials used make Series 650 suitable where extremely mechanical and chemical resistance is needed and also a good weatherability is required. The recommended hardener system is Series 600-HDA, mixture 4:1 for all plastics and metals. Series 650 is based on different polyester and acrylic-resins, so obligatory in case of outdoor use is the absolute gloss stability. It's also possible to work with the other offered hardener systems Series 600-HDI and Series 600-HDR (special for backing processes).

**Characteristics**

This modern screen printing ink is suitable for flatbed equipment and also for the use in hand printing process.

The fast drying characteristic allow also a use in cylinder press process. The ink line is developed to combine rheologic properties for the full area print with very smooth surface and for the fine detail print with exact definition. The offered solvents (Series 600-017, thinner; Series 600-018 and Series 10-02637, retarders; Series 600-019, accelerator) guarantee a optimized use in the recommended printing processes. Chemical resistances are developed in a range of 72 to 96 hours in relation to the regional conditions (humidity, temperature, etc.). A forced curing with 140-160°C for a period of 20-30 minutes is always helpful.

**Auxiliary agents**

The screen printing inks Series 650 are developed for user-friendly handling. This means, that a normal reduction of viscosity with the offered thinner Series 600-017, addition amounts app. 15% by weight results a constant long-term consistency for hand print and automatically printing equipment's. The cylinder press technology requires a higher dilution with thinner; we recommend accelerator Series 600-019, addition around 20 weight-% and also special dryer conceptions.

The optimized mixing rate with hardeners is normally 4 parts to 1part. In relation to chemical and mechanical resistances but also flexibility a reduction of hardener quantities can bring advantages. We recommend the systems Series 600-HDA and Series 600-HDR (for backing process) for all metals and plastic materials. For indoor applications a use of hardener Series 600-HDI is sometimes senseful. The pot life is in relation to the regional conditions always > 8 hours. The experience shows that the 2-component metallics has a restriction in pot life; it's possible that the practical rheologic properties are reduced to 4 hours.

Other additives offering useful possibilities of modification are specified in the Technical leaflet Series 600: Auxiliary agents for 2-component screen printing inks.

The addition of additives changes the actual product properties so that the spectrum of printing stock as well as the resistances may be modified, in some cases to a negative result.

## Pigments and Light Fastness

Points to the future, the high opaque ink line Series 650 is heavy metal free and mono-pigmented. So in the most cases a pre-print with white to achieve the color shade is not necessary or superfluous. A useful choice of high density color shades is at the disposal of the user to cover practically the whole color chromatic spectrum:

Series 650-1000	MS-Lemon yellow
Series 650-1200	MS-Corn yellow
Series 650-2000	MS-Orange
Series 650-3000	MS-Carnation red
Series 650-4000	MS-Violet
Series 650-8000	MS-Black
Series 650-9000	MS-White
Series 650-0900	MS-Ultramarine (no lightfastness)

In addition to these opaque base colors the customer find five transparent, high pigmented color shades for special mixtures and to increase sometimes the brilliance. In combination with metal particles results attractive effects:

Series 650-1100	MS-Transparent yellow
Series 650-3100	MS-Transparent red
Series 650-3200	MS-Transparent dark red
Series 650-3300	MS-Transparent magenta
Series 650-5000	MS-Transparent blue
Series 650-6000	MS-Transparent 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 versions

Series 650-33	Black, opaque
Series 650-00	White, opaque

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 650-0950	Cyan
Series 650-0960	Yellow
Series 650-0970	Magenta
Series 650-0980	Black
and in addition the transparent bases	
Series 650-04	Transparent paste
Series 650-06	Thixotropic paste

As standard varnishes are the systems

Series 650-05	Varnish, glossy
Series 650-05-MT	Varnish, mat
Series 650-07	Varnish, textured

available and this in complement with nearly all individual specialties.

As metallic effect colors we have the standard range

Series 650-100	Silver, resistant
Series 650-101	Silver, brilliant
Series 650-102	Gold, light
Series 650-103	Gold, standard
Series 650-100	Gold, ducat
Series 650-106	Copper

All inks of this series are non toxic and follow the europe regulation EN 71, part 3 (Safety of toys, migration of certain elements). With the exception of MS-0900 (Ultramarine) and the fluorescent ins (Series 650-40 to Series

650-49) all pigments used in Series 650 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

The composition of the solvents ensures both long-lasting stability of the viscosity in the screen and quick release of solvents in the application process. Universal thinner Series 600-017 usefully combines the above mentioned properties and mostly makes the use of special retarders unnecessary. For faster crosslinking between resins and hardener a IR- or Leister-hot air curing is helpful.

## Stencils

As these inks are free of high aggressive solvents and water, the most common emulsions and films can be used. Preliminary test's are necessary by using indirect stencil materials.

## Cleaning

Wet screen printing ink or not completely cured inks can be removed with all commercial solvent based cleaning agents of little polarity. Screen printing-specific universal cleaning agents like Series 600-URS and Series 600-BRS are the most suitable. Removal of completely cured 2-component screen printing ink Series 650 is time consuming and only possible using very aggressive media (de-coaters).

## Storage

Under normal conditions (limited change of temperature, medium temperature 20-35°C, humidity 20-70%) we guarantee a shelf life of 24 month. For metallics be valid a storage time of 6 month.

## Packing

Series 650 are available in 1 kg and 5 kg polyethylene 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) 55509 for Germany, waste disposal key (Sonderabfall) X(1640) 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 doubt please contact our technical advisors. The application, use and processing of the products delivered by us are beyond our control. This is subject to our responsibility and there is no liability or guarantee on our part.

All former leaflets are no longer valid.

Jun-02