

Product Data Sheet

Screen Printing Ink

MTR

UV-curing Screen Ink Range, 1-Component, Thermo-formable

APPLICATION

UV-curing screen printing inks MTR are applied on thermoplastic materials used for subsequent thermo-forming (deep-drawing) applications. They are suitable for printing on polystyrene (PS), rigid PVC, polycarbonate (PC), PET-G and PMMA (acrylic glass).

PROPERTIES

- Solvent-free UV-curing screen printing inks MTR have a medium reactivity.
- MTR inks are delivered in a ready-to-print adjustment. They result in a glossy finish.
- Applied on suitable substrates the cured ink film is suitable for thermo-forming/deep-drawing applications.
- MTR inks show a medium weather resistance.
- Note: Because of the properties required for thermo-forming applications MTR prints are not always stack-proof (horizontal), even after UV-curing. It is strongly recommended to store the prints vertically prior to deep-drawing. With regard to stackability of prints in the feeder and collector suitability of MTR for multi-colour prints on fully-automatic one-colour printing equipment has to be confirmed by corresponding pre-trials.

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 12 colour shades for mixing of RAL, PMS and HKS colours.
- Process Inks: "180" colours 4 transparent colour shades according to ISO 2846-4.
- Special colour shades are available upon request.
- More information about available colour shades in the detailed tables in section Colour Shades.

CHOICE OF PIGMENTS AND LIGHT FASTNESS

Colour shades of MTR ink range contain pigments with a high light fastness. Light fastness and weather resistance will reduce if thinner layers are applied or if base colours are mixed with a high ratio of white or varnish.

Applied on suitable substrates screen printing inks MTR are suitable for medium-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks MTR are supplied in a ready-to-print adjustment. Generally, addition of auxiliary agents is not necessary.
- For some rare and special applications and depending on local conditions, addition of certain agents/additives is possible.
- Prior to printing, the inks should be stirred well to obtain a homogeneous dispersion of all ingredients.

AUXILIARY AGENTS

Application	Product	Addition in % by weight	Additional Information
Thinning	MTR/V*	Max. 10%	Elastic thinner
Viscosity increase	Thickening powder	1 - 2%	Stir with mixer
Matting	Matting powder	5 - 10%	Stir with mixer; additional thinning with MTR/V may be required.
Reactivity increase	LAB-N 551564	1 - 3%	Photoinitiator
Flow agent	Additive UV/VM	1 - 2%	Do not overdose!
	Additive UV/N	1 - 2%	Wetting agent, also promotes flow properties.

* Thinner Additive MTR/V is a reactive UV monomer, not a commercial solvent!

OVERPRINTING

Generally, it is not necessary to overprint MTR inks with varnish. If required, however, overprinting with varnish MTR/E50 is possible.

BRONZE COLOURS, MIXING OF BRONZE INKS

The following bronze colours with a stable shelf life are available upon request:

- Silver: MTR 79

Printers can mix bronzes themselves using bronze pastes B 75, B 76, B 77 and B 79 as well as bronze powder B 78-POWDER.

These "B" bronze pastes and "B" bronze powder are mixed with varnish MTR/E50 prior to processing.

Mixing ratios in parts by weight:

Gold bronze paste/powder	to	MTR/E50	=	1 : 3 - 4
Silver bronze paste	to	MTR/E50	=	1 : 4 - 5

- **Note:** For technical reasons these mixtures only have a pot life of approx. 6 h! Afterwards ink will thicken and become solid.
- **Note:** Bronzes B 75 to B 79 are prone to oxidation (exception B 78-POWDER). Therefore, overprinting with MTR/E50 is recommended.
B 78-POWDER does not tend to oxidation. The pale copper shade will not darken with time.

DRYING / UV-CURING

- MTR inks only dry/cure under UV-radiation.
- Suitable UV-driers with Hg medium-pressure lamps (250 – 400 nm) and an efficiency between 80 and 200 W/cm have to be used.
- Preferably, use reflectors with a focussed radiation.
- Ensure an even radiation (intensity/distance to the lamps) of the whole printed image.
- Curing parameter depend on thickness of printed ink layer, colour, substrate or substrate quality and temperature as well as construction and performance of the UV drier.
- Curing energy required depends on number of printed ink layers (check intermediate adhesion), printed layer thickness, colour and type of substrate. Hence, printers should determine the exact required energy with their own UV-drier.
- **UV-curing energy guide values:**
(printed with 150-31 fabric, white substrate)
UV-energy: **250-300 mJ/cm²**
 (measured with Kühnast UV-integrator, 250 – 410 nm, max. 365 nm)
Belt speed: **UV-radiator:** **1 x 120 W/cm: 10 - 15 m/min.**
 2 x 120 W/cm: 20 - 30 m/min.
- Adhesion should only be checked several minutes after curing. Due to the post-curing process of the ink and depending on the substrate, sufficient adhesion may sometimes only be achieved after up to 24 hours.

SCREEN FABRIC / STENCILS

MTR inks are formulated for printing with fabrics of 120 – 165 threads/cm. Printability and especially UV-curing properties with coarser or finer fabrics should be evaluated by corresponding trials.

All copy emulsions and capillary films suitable for solvent based and UV-curing screen inks can be used, such as our program of SunCoat or Murakami products.

CLEANING

Uncured UV inks can be removed from stencils and tools using our solvent based universal cleaning agents of the URS range.

Cleaning of cured UV inks is very time-consuming and hardly ever possible.

Note: As the acrylates contained in these UV inks may cause skin irritation, clean contaminated skin with water and soap immediately. Remove and clean contaminated clothing straightaway.

PACK SIZE

Screen printing inks MTR are delivered in 1 litre containers. Other pack sizes are available upon request.

SHELF LIFE

In closed original containers, MTR inks generally have a shelf life of 2 years from date of production.

For exact date of expiry, please refer to the label.

SAFETY DATA SHEETS

Read safety data sheet prior to processing.

Safety data sheets comply with Regulation (EC) No. 1907/2006 (REACH), Appendix II.

CLASSIFICATION AND LABELLING

Hazard classification and labelling comply with Regulation (EC) No. 1272/2008 (CLP/GHS).

CONFORMITY

Coates Screen Inks GmbH does not use any of the substances or mixtures for the production of printing inks, which are banned according to the EUPIA (European Association of the Printing Inks Industry) exclusion policy.

Further compliance confirmations are available upon request.

ADDITIONAL INFORMATION ABOUT OUR PRODUCTS

Product data sheets: Auxiliary Agents for UV-Curing Screen Printing Inks

Brochures: UV-Curing Screen Printing Inks

Internet: Various technical articles are available for download on www.coates.de, section "SN-Online"

FOR COLOUR RANGES, PLEASE REFER TO NEXT PAGE.

COLOUR SHADES

C-MIX 2000 BASE COLOUR SHADES					
Mixing system for matching of PMS, HKS, RAL colours (on white substrates)					
Start formulations available in data base „Formula Management C-MIX 2000“					
According to colour card C-MIX 2000					
primrose	MTR/Y30	red	MTR/R50	green	MTR/G50
golden yellow	MTR/Y50	magenta	MTR/M50	black	MTR/N50
orange	MTR/O50	violet	MTR/V50	white	MTR/W50
scarlet	MTR/R20	blue	MTR/B50	varnish	MTR/E50
4 COLOUR PROCESS INKS (CMYK)					
According to colour card STANDARD 1 for screen printing inks					
process yellow	MTR 180	process black	MTR 65		
process magenta	MTR 181	transparent paste	MTR/TP		
process cyan	MTR 182				
4 COLOUR PROCESS INKS (CMYK), DIA-ADJUSTMENT FOR BACKLIT PRINTS					
Process colours with increased density					
Information about availability upon request					
process yellow	MTR 180/00-DIA	process black	MTR 65/HD		
process magenta)	MTR 181/00-DIA	transparent paste	MTR/TP		
process cyan	MTR 182/00-DIA				
SPECIAL PRODUCTS: Special Colour Shades, Vanishes, Pastes					
Information about availability upon request					
white, highly opaque	MTR 60/HD	matt varnish	MTR 70/MT		
black, highly opaque	MTR 65/HD	silver, stable shelf life	MTR 79		

Matching of PMS, RAL, NCS colours and special shades upon request.

In some individual cases the product characteristics of special colour shades and modifications of this ink type manufactured upon customer request may differ from the above properties.

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. We provide these details to inform customers about our products and their possible applications. However, on account of various factors influencing processing of our products it is absolutely essential to carry out printing trials under local production conditions. Choice of individual ink types and their suitability for the intended application is the sole and entire responsibility of the user. We do not assume any liability for any problems of technical or process-related nature. Any liability shall be limited to the value of the goods delivered by us and processed by the user.

All former product data sheets are no longer valid.

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