

Product Data Sheet

Screen Printing Ink

HG

Solvent Based Screen Ink Range, 1-Component

APPLICATION

Screen printing inks for printing on thermoplastics, especially rigid and plasticized PVC, PMMA (acrylic glass) polycarbonate, print treated polyester foils, various types of polystyrene, ABS, SAN and copolymers.

PROPERTIES

- Screen inks HG are solvent based, 1-component screen printing inks with a good printability. They dry quickly by evaporation of solvents and result in a glossy to satin gloss finish.
- HG inks show good weather resistance.
- Flexibility of these inks is good. Decorative prints with HG can be applied to pre-treated (usually with primer) polyester foils used for membrane switch overlays.
- HG prints show good thermal forming properties (deep drawing applications).
- Adjusted with quickly evaporating thinners, e.g. VD 40, HG/VSP, HG inks can also be used for roller or spray coating applications.
- Note: As thermoplastic injection moulds especially PS, PC and PMMA are sensitive to tension cracks pre-tests are absolutely essential for such printing applications.

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 12 colour shades for mixing of RAL, PMS and HKS colours.
C-MIX 2000-XL 5 extra highly lightfast and weather resistant colour shades.
- Opaque: Standard Colour shades with medium to good opacity.
Standard HD Highly opaque colour shades.
- Transparent: "480" colours Highly transparent colour shades.
- Process Inks: "180" colours 4 transparent colour shades according to ISO 2846-4.
- Bronzes: B / AB / MG Gold, silver and copper shades.
- 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 HG 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. For high light fastness and weather resistance requirements, we offer 5 colour shades C-MIX 2000-XL (2 yellow / 2 red / 1 white).

Applied on suitable substrates screen printing inks HG are suitable for outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks HG are not supplied in a ready-to-print adjustment.
- Depending on local conditions the ink is adjusted for printing by addition of 15 to 25 % by weight thinner or retarder (stir with mixer, agitator).
- Prior to printing, the inks should be stirred well to obtain a homogeneous dispersion of all ingredients.

THINNERS / RETARDERS

For adjustment of screen inks HG, the following products are available:

| | | |
|------------------|--|--|
| Thinner: | <input type="radio"/> VD 20 | Very quick thinner, good solving power |
| | <input type="radio"/> VD 40 | Quick, very high solving power |
| | <input checked="" type="checkbox"/> VD 50 | Standard thinner |
| | <input checked="" type="checkbox"/> VD 60 | Standard thinner (mild odour) |
| | <input type="radio"/> XVH | Very mild thinner, low solving power |
| Retarder: | <input checked="" type="checkbox"/> VZ 10 | Quick retarder |
| | <input type="radio"/> VZ 20 | Medium retarder |
| | <input checked="" type="checkbox"/> VZ 25 | Medium retarder |
| | <input type="radio"/> VZ 30 | Very slow retarder |
| | <input type="radio"/> VZ 40 | Very slow retarder |

■= Preferred ○= Suitable

Depending on printing conditions, the products listed above can be mixed into the inks individually or as mixtures. Please note that depending on evaporation rate of the thinner/retarder used drying times may be longer.

Thinner/retarder should be mixed into the ink thoroughly using a mixer or agitator. In addition, inks should be stirred well prior to each processing to obtain a homogeneous dispersion of all ingredients.

ADJUSTMENT FOR SPRAY COATING APPLICATION

HG inks can also be roller coated or applied with a spray gun. For these applications, HG inks are thinned with quick evaporating thinners such as VD 20 or VD 40 (preferred for roller coating) or HG/VSP (spray coating). Addition of thinner, usually >50%, depends on the required processing viscosity.

ADDITIONAL AUXILIARY AGENTS

| Application | Product | Addition in % by weight | Additional Information |
|---------------------|-------------------|-------------------------|---------------------------------|
| Retarder paste | VP/K | Max. 10% | Possibly slightly reduced gloss |
| | LAB-N 111420/VP | Max. 10% | Gloss slightly reduced |
| Viscosity increase | Thickening powder | Max. 3% | Stir with mixer |
| Matting | Matting powder | Max. 5% | Stir with mixer |
| Flow agent | VM 2 | 0.3 - 0.5% | Do not overdose! |
| Anti floating agent | LAB-N 561248 | 1 - 1.5% | Stir with mixer |

OVERPRINTING

Generally, it is not necessary to overprint HG inks with varnish. However, overprinting to increase chemical resistances is possible with the following solvent based special varnishes:

- HG/E50: 1-component, Standard varnish of C-MIX colour range
- SG 70/15: 1-component, Increase of alcohol and petrol resistance
- PK 70/36: 1-component, Increase of alcohol and petrol resistance
- Z 70/114-PVC: 2-component, for PVC substrates, high solvent resistance
- Note: Pre-tests to determine suitability are essential!

BRONZE COLOURS, MIXING OF BRONZE INKS

Bronze colours 75/AB to 79/AB and metal gloss colours 75/MG to 79/MG are available.

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. For examples of colour shades please refer to our Bronze Colour Card.

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

Mixing ratios in parts by weight:

| | | | |
|--------------------------|----|----------------|-------------|
| Gold bronze paste/powder | to | HG/B or HG/E50 | = 1 : 3 - 4 |
| Silver bronze paste | to | HG/B or HG/E50 | = 1 : 4 - 5 |

Contrary to AB and MG, bronze colours B bronzes are prone to oxidation (exception B 78-POWDER). Therefore, they should be overprinted, e.g. with HG/E50. B-bronzes are not recommended for long-term outdoor applications.

B 78-POWDER does not tend to oxidation. The pale copper shade will not darken with time. Colour of inks mixed with B 78-POWDER is similar to colour 78/AB as shown on our "bronze colour card".

Note: When overprinting bronze colours (B/ AB/ MG) with varnish or other colour shades, it is essential to carry out pre-tests to check intermediate adhesion of the ink layers (fingernail test, tape test).

DRYING

HG screen printing inks dry physically, i.e. by evaporation of solvents.

Drying times below are only approximate as drying properties depend on various factors:

- Type and amount of thinners/retarders used.
- Thickness of printed ink layer; number of overprinted ink layers.
- Rack drying or tunnel dryer.
- Temperature, air supply, speed of air stream.
- Type of substrate/material printed.

Depending on local conditions, drying time in a drying frame (rack) is approx. 10 - 15 minutes at room temperature (20°C). Drying time using an efficient tunnel dryer (e.g. 2 hot air and 1 cold air section) is about 20 - 60 seconds at a temperature of 50°C.

Note: Addition of retarders may result in much longer drying times!

SCREEN FABRIC / STENCILS

HG inks have been formulated for printing with fabrics ranging from 77 to 140 threads/cm. Suitability for printing with coarser or finer fabrics should be determined by corresponding pre-trials.

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

CLEANING

Stencils and tools can be cleaned with our universal cleaning agents URS or URS 3.

PACK SIZE

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

SHELF LIFE

In closed original containers, HG inks generally have a shelf life of 5 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. Screen printing inks range HG C-MIX 2000 colour shades, standard, highly opaque standard colours (HD), process colours, silver, fluorescent colours and transparent colours comply with the requirements of toy standard „EN 71-3:2019 Safety of toys – Migration of certain elements (category III: scraped off material).

Further compliance confirmations are available upon request.

ADDITIONAL INFORMATION ABOUT OUR PRODUCTS

Product data sheets: Auxiliary Agents for Screen Printing HM

Brochures: Solvent Based 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 | HG/Y30 | red | HG/R50 | green | HG/G50 |
| golden yellow | HG/Y50 | magenta | HG/M50 | black | HG/N50 |
| orange | HG/O50 | violet | HG/V50 | white | HG/W50 |
| scarlet | HG/R20 | blue | HG/B50 | varnish | HG/E50 |
| C-MIX 2000 BASE COLOUR SHADES XL | | | | | |
| (extremely lightfast pigmentation for yellow / red and white) | | | | | |
| primrose | HG/Y30-XL | scarlet | HG/R20-XL | white | HG/W50-XL |
| golden yellow | HG/Y50-XL | red | HG/R50-XL | | |
| STANDARD Colour Range (medium opacity) | | | | | |
| According to colour card STANDARD 1 for screen printing inks Availability of further standard shades upon request | | | | | |
| citric yellow | HG 10/NT-NEU | dark pink | HG 24/NT-NEU | fir green | HG 41/NT-NEU |
| medium yellow | HG 11/NT-NEU | light blue | HG 30/NT-NEU | brilliant green | HG 42/NT-NEU |
| dark yellow | HG 12/NT-NEU | medium blue | HG 31/NT-NEU | reseda green | HG 43/NT-NEU |
| light orange | HG 14/NT-NEU | ultra marine | HG 32/NT-NEU | grass green | HG 44/NT-NEU |
| orange | HG 15/NT-NEU | dark blue | HG 33/NT-NEU | light brown | HG 50/NT-NEU |
| ochre yellow | HG 17/NT-NEU | turquoise | HG 34/NT-NEU | dark brown | HG 51/NT-NEU |
| light red | HG 20/NT-NEU | marine blue | HG 35/NT-NEU | white | HG 60/NT-NEU |
| bright red | HG 21/NT-NEU | violet | HG 36/NT-NEU | black | HG 65/NT-NEU |
| carmin red | HG 22/NT-NEU | light green | HG 40/NT-NEU | | |
| STANDARD Colour Range HD (high opacity) | | | | | |
| According to colour card STANDARD HD for screen printing inks Availability of further standard HD shades upon request | | | | | |
| citric yellow, highly opaque | HG 10/HD-NT-NEU | bright red, highly opaque | HG 21/HD-NT-NEU | | |
| medium yellow, highly opaque | HG 11/HD-NT-NEU | carmin red, highly opaque | HG 22/HD-NT-NEU | | |
| dark yellow, highly opaque | HG 12/HD-NT-NEU | white, highly opaque | HG 60/HD-NT-NEU | | |
| orange, highly opaque | HG 15/HD-NT-NEU | black, highly opaque | HG 65/HD-NT-NEU | | |
| light red, highly opaque | HG 20/HD-NT-NEU | | | | |
| SPECIAL PRODUCTS: Special Colour Shades, Varnishes, Pastes | | | | | |
| Information about availability upon request | | | | | |
| black, matt | HG 65/MT-NT-NEU | black light varnish „blueish“ | HG 70/66-NT | | |
| black toning paste | HG 65/22 | black light varnish “yellowish” | HG 70/84-NT | | |
| black, IR-permeable | HG 66/IR | overprint varnish | HG/E50 | | |
| blackboard black | HG 67 | overprint varnish, matt | HG 70/MT | | |
| black, low PAH content | HG 68/NT | varnish, highly transparent | HG 70/20 | | |
| transparent paste | HG/TP | UV-absorbing varnish | HG 70/96-NT | | |
| etch imitation | HG 63/00 | obliterating grey | HG 74 | | |
| matt paste | HG/MP | phosphorescent ink | HG 96 | | |
| bronze binder | HG/B | | | | |

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

FOR FURTHER COLOUR RANGES, PLEASE REFER TO NEXT PAGE.

COLOUR SHADES

| 4 COLOUR PROCESS INKS (CMYK) According to colour card STANDARD 1 for screen printing inks | | | |
|---|---------------|------------------------------|---------------|
| process yellow | HG 180/NT-NEU | process black | HG 65/NT-NEU |
| process magenta | HG 181/NT-NEU | transparent paste | HG/TP |
| process cyan | HG 182/NT-NEU | | |
| Highly Transparent Inks „480 Range“ According to colour Card HG Transparent Inks | | | |
| highly transparent yellow | HG 480/NT-NEU | highly transparent dark blue | HG 482/00-NT |
| highly transparent magenta | HG 481/NT-NEU | highly transparent violet | HG 483/NT-NEU |
| highly transparent red | HG 481/00-NT | highly transparent green | HG 484/NT-NEU |
| highly transparent light blue | HG 482/NT-NEU | highly transparent orange | HG 485/NT-NEU |
| AB – BRONZE INKS and MG – METAL GLOSS INKS According to Bronze Colour Card | | | |
| AB Bronze Inks | | MG Metal Gloss Inks | |
| rich gold | HG 75/AB | rich gold | HG 75/MG |
| rich pale gold | HG 76/AB | rich pale gold | HG 76/MG |
| pale gold | HG 77/AB | pale gold | HG 77/MG |
| copper | HG 78/AB | copper | HG 78/MG |
| silver | HG 79/AB | silver | HG 79/MG |

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

All above information refers to the colour shades listed in this product data sheet and other standard shades of this screen ink range. Information about availability of further standard 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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