Product Data Sheet
Screen Printing Ink

SunChemical®
a member of the DIC group
Color & Comfort

SGF

Solvent Based Screen Ink Range, 2-Component

APPLICATION
Screen printing inks for printing on glass, metals, chromium-plated and coated surfaces, pre-treated polyolefins. Also, for printing of various thermoplastics like PMMA (acrylic glass) and ABS and duroplastics (phenolic and melamine resins, glass-fibre reinforced polyester and epoxy resins).

PROPERTIES
- Screen inks SGF are solvent based 2-component screen printing inks, which have to be processed with hardener.
- **In line with current safety requirements SGF inks have been formulated with raw materials low in harmful substances. Thus, SGF inks do not contain aromatics, butyl glycolate (GB-Ester), cyclohexanone, Bisphenol A (BPA) and also no polycyclic aromatic hydrocarbons (PAH).**
- SGF inks show good printability. They dry chemically-physically and result in a glossy finish.
- This ink range is especially suitable for technical/industrial applications requiring high physical and chemical resistances.
- Fully cured prints show a good scratch resistance and a highly tough surface.
- SGF inks exhibit good resistance against chemical cleaning agents.
- SGF inks are suitable for long-term outdoor applications.
- Note: Because of the large variety of substrates, pre-tests are essential.

COLOUR SHADES - OVERVIEW
- Mixing System: C-MIX 2000 12 colour shades for mixing of RAL, PMS and HKS colours. The SGF mixing colours show high pigmentation to achieve high opacity on transparent substrates. If high opacity is not required, the ink can be blend with varnish E50.
- 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 SGF 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 substrate screen printing inks SGF are suitable for long-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING
- Screen printing inks SGF are not supplied in a ready-to-print adjustment.
- As this ink range is a 2-component system SGF inks have to be mixed with hardener at a specified ratio prior to processing.
- Thinner is added after addition of hardener.
- The mixed ink **must** pre-react, especially when printing on **glass**, for approx. 15-20 minutes prior to processing.
- Processing is then possible within a specified period of time (=pot life) of approx. 6-8 hours/20 C°.

Hardener:
Screen printing inks SFG must be mixed with hardener SGF/H prior to processing.
Hardeners are sensitive to humidity. Therefore, containers always must be tightly closed.

Ink and hardener have to be mixed at a specified ratio (parts by weight):

- **Hardener SGF/H:** Mixing ratio: **Ink : Hardener = 4 : 1**

Pot life:

- Ink mixed with hardener may only be processed within a limited period of time (=pot life)
- **Pot life is approx. 6 - 8 h (at 20°C).**
  Higher temperatures will reduce pot life.
- We do not recommend processing the inks for longer than the pot life as adhesion and resistance properties will then continually deteriorate, even if the ink still seems to be liquid and processable.

THINNERS / RETARDERS

Depending on local conditions ink is adjusted to printing consistency by addition of 5 – 25 % of thinner or retarder (stir with mixer, agitator). Prior to each processing, the inks should be stirred well to obtain a homogeneous dispersion of all ingredients.

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

Thinner:	☑ ■ **VD 60**	**Standard thinner (mild odour)**
Retarder:	■ **VZ 25**	**Medium retarder**
	☑ ■ **VZ 35**	**Slow retarder**
	☑ ■ **VZ 40**	**Very slow retarder**

■= Preferred ○= Suitable **☑ = product is free of aromatics, butylglycolate, cyclohexanone, PAH**

Note: Retarders VZ 10, VZ 20 and VZ 30 are not suitable for SGF inks!

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.

ADDITIONAL AUXILIARY AGENTS

Application		Product	Addition in % by weight	Additional Information
Retarder paste		LAB-N 111420/VP	Max. 10%	Possibly slightly reduced gloss
Antistatic paste	☑	STM-P1	Max. 10%	Possibly slightly reduces gloss
Viscosity increase	☑	Thickening powder	Max. 3%	Stir with mixer
Matting	☑	Matting powder	Max. 5%	Stir with mixer
Flow agent		VM 1	3 - 5%	Do not overdose!
	☑	VM11	3 – 5%	Do not overdose!

OVERPRINTING

Generally, it is not necessary to overprint SGF inks with varnish. However, overprinting to increase resistances of ink layers is possible with SGF/E50.

DRYING / HARDENER REACTION

Mixture of SGF ink/hardener is a chemically-reactive system with a physical pre-drying.

- Ink dries physically by evaporation of solvents.
- Then the ink film cures by chemical cross-linkage reaction.
- Drying and hardener reaction temperature must be at least >20°C.

Drying

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.
- Drying temperature.

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Hardener Reaction

The special adhesion and resistance properties of the ink are achieved only by chemical cross linkage reaction. This cross-linkage reaction depends on time and temperature.

The following are guide values only:

Temperature	Time approx.	Condition of ink	Condition of ink film
<20°C air drying		Hardener SGF/H does not react!	Ink film will not achieve any resistance
20°C air drying	60 min.	Dry enough for overprinting	No resistance yet
	<12h	Overprinting still good	No resistance yet
	>72h	High degree of cross-linkage	High resistance achieved
	>5 days	Maximum cross-linkage	Maximum resistance achieved
80°C oven curing	ca. 10 min.	Dry enough for overprinting	No resistance yet
	60 min.	High degree of cross-linkage	High resistance achieved
140°C oven curing	15 min.	High degree of cross-linkage	High resistance achieved
	30 min.	Maximum cross-linkage	Maximum resistance achieved

Resistance

Ink range SGF can be used for a large range of partially quite demanding substrates. These materials may require pre-cleaning/degreasing or a mandatory pre-treatment of substrates such as flame, corona, plasma (e.g. polyolefines) treatments. Duroplastics and coatings may show quite different qualities. Therefore, suitability should always be determined by pre-trials taking into consideration above processing parameters.

Resistances should not be checked before the ink has fully cured / cross-linked:
Drying: 20°C/> 72 h, 80°C/>60 Min., 140°C/>30 min.

SCREEN FABRIC / STENCILS

SGF inks have been formulated for printing with fabrics ranging from 77 to 120 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

The longer inks dry on stencils and tools the harder will be their removal due to the chemical cross-linkage reaction. Therefore, always clean stencils and tools with our universal cleaning agents URS, URS 3 or thinner VD 40 as soon as possible.
Note: When producing prints for end products to be evaluated for compliance with PAH threshold values (e.g. AfPS GS 2014:01 PAH) we recommend cleaning with our products VD 60 or UF/V.

PACK SIZE

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

SHELF LIFE

In closed original containers, SGF inks and hardener SGF/H 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 to produce 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 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)

C-MIX 2000 Colours of SGF range have a higher pigmentation than the usual C-MIX shades.

Start formulations available in data base „Formula Management C-MIX 2000“
According to colour card C-MIX 2000-P

primrose	SGF/Y30	red	SGF/R50	green	SGF/G50
golden yellow	SGF/Y50	magenta	SGF/M50	black, PAH-free	SGF/N58
orange	SGF/O50	violet	SGF/V50	white	SGF/W50
scarlet	SGF/R20	blue	SGF/B50	varnish	SGF/E50

AB – BRONZE INKS and MG – METAL GLOSS INKS

According to Bronze Colour Card

Upon request	

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

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