Product Data Sheet
Screen Printing Ink

SunChemical®
a member of the DIC group
Color & Comfort

YN

Solvent Based Screen Ink Range, 1- and (alternatively) 2-Component

APPLICATION

Screen printing ink, mainly for decoration of containers (cans, tubes and cartridges), various promotional, and souvenir items. YN inks are especially suitable for printing of thermoplastics made of pre-treated polyolefines, i.e. polypropylene (PP) and polyethylene (HD-PE, LD-PE), also for duroplastics, rigid PVC and polystyrene (PS), coated substrates, metal and Chromolux paper.

PROPERTIES

- Screen inks YN are solvent based screen printing inks. They can be processed as 1-component and (alternatively) as 2-component ink with hardener.
- Processed as 1-component ink YN dries physically, as 2-component ink physically chemically-reactive and results in a glossy finish.
- Processing as 2-component ink (=with hardener) will further increase ink adhesion properties on difficult substrates such as pre-treated PP/PE.
- This ink system shows good resistance against filling products, e.g. cosmetics and chemicals, especially when processed as 2-component ink with the addition of hardener.
- YN inks are suitable for medium-term outdoor applications.
- Note: Because of the variety of substrates, pre-tests are essential. It is also advised to check efficiency of possibly required pre-treatment of substrates (cleaning/degreasing, flame/corona/plasma treatment) or maybe even post-treatment (flame-drying).

COLOUR SHADES - OVERVIEW

- Mixing System: C-MIX 2000 — 12 colour shades for mixing of RAL, PMS and HKS colours.
- Opaque: Standard — Colour shades with medium to good opacity.
  Standard HD — Highly opaque 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 YN 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 YN inks are suitable for medium-term outdoor applications.

ADJUSTMENT FOR SCREEN PRINTING

- Screen printing inks YN are not supplied in a ready-to-print adjustment.
- **Processed as 1-component ink (without addition of hardener):**
  Ink is adjusted to printing consistency by addition of thinner or retarder (stir with mixer or agitator).

- **Processed as 2-component ink (with addition of hardener):**
  As 2-component ink YN inks have to be mixed with hardener at a specified ratio prior to processing. Thinner is added after addition of hardener.
  The mixed ink should be allowed to pre-react for approx. 15 minutes prior to processing (recommendation). Processing is then possible for a specified period of time (=pot life).

Hardener:
Alternatively, screen inks range YN can be processed with **hardener Z/H.**
Hardeners are sensitive to humidity. Therefore, containers always have to be tightly closed.
Addition of **hardener Z/H** to YN inks is **10 parts ink : 1 part hardener (parts by weight)**.

Pot life:

- Ink mixed with hardener Z/H may only be processed within a limited period of time (=pot life)
- **Pot life of YN + hardener Z/H is up to 10 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 15 – 25 % of thinner or retarder.

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

Thinner:	○	VD 30	**Standard thinner**
	■	**VD 60**	**Standard thinner (low odour)**
Retarder:	■	**VZ 25**	**Medium retarder**
	○	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

ADDITIONAL AUXILIARY AGENTS

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

OVERPRINTING

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

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 YN/B or varnish YN/E50 prior to processing.

Mixing ratios in parts by weight:

Gold bronze paste/powder	to	YN/B or YN/E50	=	1 : 3 - 4
Silver bronze paste	to	YN/B or YN/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 YN/E50.

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 / HARDENER REACTION

1. **Processing WITHOUT addition of hardener:**
   Ink dries physically, i.e. by evaporation of solvents.
2. **Processing WITH addition of hardener Z/H:**
   First, ink dries physically, followed by chemical cross-linkage reaction.
   Drying and reaction temperature of hardener must be at least 15°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.

Depending on local conditions, drying time in a drying frame (rack) is approx. 20 minutes at room temperature (20°C). Drying time with heat application (hot air fan/oven) is about 60 seconds at a temperature of 50°C.
Note: Addition of retarders may result in much longer drying times!

Hardener Reaction

Basically, the special adhesion and resistance properties of the ink are achieved only by chemical cross linkage reaction between ink and hardener. 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
<15°C air drying		Hardener Z/H does not react!	Ink film will not achieve any resistance
20°C air drying	20 min.	Dry enough for overprinting	No increase of resistance yet
	>72h	High degree of cross-linkage	Very high resistance values achieved
	>5 days	Maximum cross-linkage	Maximum resistance achieved
80°C oven curing	approx. 5 min.	Dry enough for overprinting	No resistance yet
	60 min.	Very high degree of cross-linkage	Very high resistance values achieved

Resistance Tests

When processing YN inks with hardener Z/H resistances should not be checked before the ink has fully cured/ cross-linked: Drying with 20°C/5 days, with 80°C/>60 minutes.

SCREEN FABRIC / STENCILS

YN 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

Stencils and tools can be cleaned with our universal cleaning agents URS or URS 3.
When processing as 2-component system, 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 as soon as possible. Thinner VD 40 can be used to remove persistent ink residues.

PACK SIZE

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

SHELF LIFE

In closed original containers, YN inks generally have a shelf life of 3 years from date of production. Hardener Z/H has a shelf life of 24 months from date of production, also in closed original containers.
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 YN standard shades, 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”; e.g. processing of 2 component inks

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	YN/Y30	red	YN/R50	green	YN/G50
golden yellow	YN/Y50	magenta	YN/M50	black	YN/N50
orange	YN/O50	violet	YN/V50	white	YN/W50
scarlet	YN/R20	blue	YN/B50	varnish	YN/E50

STANDARD Colour Range (medium opacity)

According to colour card STANDARD 2 or YN/Z/ZM for screen printing inks
Availability of further standard shades upon request

citric yellow	YN 10/NT-NEU	carmine red	YN 22/NT-NEU	violet	YN 37/NT-NEU
medium yellow	YN 11/NT-NEU	pink	YN 25/NT-NEU	light green	YN 40/NT-NEU
dark yellow	YN 12/NT-NEU	light blue	YN 30/NT-NEU	fir green	YN 41/NT-NEU
orange	YN 15/NT-NEU	medium blue	YN 31/NT-NEU	brilliant green	YN 42/NT-NEU
ochre yellow	YN 17/NT-NEU	ultra marine	YN 32/NT-NEU	light brown	YN 50/NT-NEU
light red	YN 20/NT-NEU	dark blue	YN 33/NT-NEU	white	YN 60/NT-NEU
bright red	YN 21/NT-NEU	turquoise	YN 34/NT-NEU	black	YN 65/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	YN 10/HD-NT-NEU	carmine red, highly opaque	YN 22/HD-NT-NEU
medium yellow, highly opaque	YN 11/HD-NT-NEU	light blue, highly opaque	YN 30/HD-NT-NEU
dark yellow, highly opaque	YN 12/HD-NT-NEU	light green, highly opaque	YN 40/HD-NT-NEU
orange, highly opaque	YN 15/HD-NT-NEU	white, highly opaque	YN 60/HD-NT-NEU
bright red, highly opaque	YN 21/HD-NT-NEU	black, highly opaque	YN 65/HD-NT-NEU

SPECIAL PRODUCTS: Special Colour Shades, Varnishes, Pastes

Information about availability upon request

white, matt	YN 60/MT-NT	bronze binder	YN/B
transparent paste	YN/TP	phosphorescent ink	YN 96

4 COLOUR PROCESS INKS (CMYK)

According to colour card STANDARD 2 or YN/YN/YNM for screen printing inks

process yellow	YN 180/NT-NEU	process black	YN 65/NT-NEU
process magenta	YN 181/NT-NEU	transparent paste	YN/TP
process cyan	YN 182/NT-NEU		

AB – BRONZE INKS and MG – METAL GLOSS INKS

According to Bronze Colour Card

AB Bronze Inks		**MG Metal Gloss Inks**	
rich gold	YN 75/AB	rich gold	YN 75/MG
rich pale gold	YN 76/AB	rich pale gold	YN 76/MG
pale gold	YN 77/AB	pale gold	YN 77/MG
copper	YN 78/AB	copper	YN 78/MG
silver	YN 79/AB	silver	YN 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.

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