

SunChemical®

Coates Screen Inks

SOLVENT BASED SCREEN PRINTING INKS



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Coates Screen Inks GmbH, Nuremberg, Germany is part of the Sun Chemical Group, one of the world's largest producers of printing inks, varnishes and pigments.

We are one of the world's leading manufacturers of screen and pad printing inks, focussing on the development and manufacture of high quality solvent based and UV-curing products for graphic and technical-industrial applications.

This brochure "Solvent Based Screen Printing Inks" exclusively contains information about our solvent based screen inks program, our range of colour shades and relevant additives for solvent based systems.

One of our strengths is the development of specific customer solutions. If you cannot find the appropriate product for your special application in this brochure, please contact us. We have much more to offer. Contact details are listed on the reverse side.

Should you be interested more in obtaining information about our choice of UV-curing or pad printing inks, please ask for our brochures "UV-curing Screen Printing Inks" or "Pad Printing Inks".

For further information please visit our website www.coates.de, **SN-Online** where you will find a variety of interesting technical articles and further detailed information about our printing inks.



ONE COMPONENT INK RANGES

for Common Thermoplastics

(not suitable for polyolefines and TPE/TPU)

HG The Versatile System

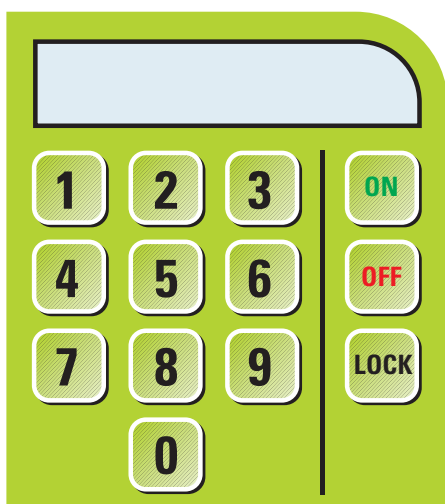
Gloss level:	high gloss
Drying speed:	quick
Broad range of applications	

Ink Range HG is the first choice of one component ink systems for graphic and technical screen applications.

Due to the well-balanced choice of raw materials contained HG inks are suitable for printing on many thermoplastics (foils, boards, formed parts) ranging from many polystyrene types, the wide range of PVC substrates to polycarbonate (PC) as well as acrylic glass (PMMA). In addition HG inks are also suitable for many paper and cardboard types and some powder-coated surfaces.

A typical technical application of HG inks is printing on pre-treated PET-foils used for decoration of membrane switch overlays.

HG prints exhibit good thermoplastic forming properties and are suitable for outdoor applications.



The HG ink series comprises a variety of colour shades, such as highly transparent colours, process colours, C-MIX 2000 colours, standard colours, highly opaque shades and even gold, silver and bronze ranges.

J Matt and Alcohol Resistant

Gloss level:	matt
Drying speed:	quick
Demanding applications	

J ink range is mainly recommended for demanding technical applications. Screen printing inks J show good alcohol resistance, high flexibility and good thermo-forming properties. They are also suitable for high-frequency welding applications, exhibit good lamination properties and outdoor resistance.



These inks are especially suitable for PVC substrates and pre-treated PET foils. To a certain extent J inks can also be used for other thermoplastics such as PC and PMMA as well as some powder-coated surfaces.

The main field of application of J inks is decoration of membrane switch overlays (as an alternative to/or in combination with HG inks). J inks are also often used as offset base primer followed by conventional offset prints. J inks are also used to aid in lamination applications as adhesion promoter applied on offset inks followed by foil lamination.

We also offer some special adjustments such as obliterating grey (J 74, light blocking layer for double-sided stickers), an IR-permeable black (J 66/IR) as well as some adjustments for signature fields.

CX The "Stacker"

Gloss level:	satin gloss
Drying speed:	very quick
Hard, quick, suitable for forming applications	

CX inks show their special properties for quick and stack proof printing (also double-sided prints) of large amounts of plastic boards, mainly polystyrene (PS) but also rigid PVC or polycarbonate (PC). In addition CX inks can also be applied to PVC self-adhesive foils, PET-G, acrylic glass (PMMA) as well as paper and cardboard.

CX prints show good thermoplastic forming properties and are suitable for outdoor applications.

CP The Hard Ink System

Gloss level:	satin gloss
Drying speed:	quick
High degree of surface hardness	

For many years CP inks have been showing good results in printing applications on polystyrene (PS), ABS, SAN and also on PVC, PET-G and polycarbonate (PC) as well as on paper and cardboard materials.

Even though CP is a one-component ink system, printed layers show a very good surface hardness and good hand sweat resistance. For that reason CP inks are often used by industrial and technical screen printers for the decoration of formed parts requiring exactly these properties.

CP prints show good thermoplastic forming properties and are suitable for outdoor applications.

ONE COMPONENT INK RANGES

for Special Applications on Thermoplastics

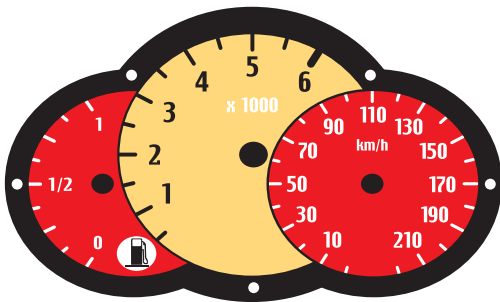
RF/K The Process Inks

RF/K process inks are used for reproduction of 4-colour halftones on rigid and plasticized PVC, polystyrene (PS) as well as polycarbonate and acrylic glass (PMMA). Various adjustments are available, e.g. colours with increased density for dia-positive prints or for processing on large format printing equipment.

CX-AM + CXX-AM The Speedometer Inks

CX-AM and CXX-AM are "silent" champions. Meantime you can find them in the cockpit of millions of cars all over the world. These inks are used to print complex and demanding scales and decorations of speedometers and other car features on polycarbonate (PC) substrates. CX-AM is suitable for flat elements which are slightly formed after printing, while CXX-AM has been especially developed to meet the requirements of modern formed 3-dimensional objects.

Colour shades of CX-AM and CXX-AM are project-related matches and manufactured according to very strict quality criteria.



CC ID Cards & Co.

Laminable screen printing ink for rigid PVC used for cheque, credit, phone cards, ID cards and the like.

XL The Mild System

XL is an extremely mild ink system for printing on tension sensitive injection moulds, mainly suitable for polystyrene but also polycarbonate (PC), PET-G or acrylic glass (PMMA).

TL Fluorescent Inks

Ink range TL comprises six strong fluorescent colours. TL inks are suitable for paper, cardboard, PS and PVC.

Fluorescent colour shades are also available in other ink ranges upon request.



PF Polyester & Co.

For printing onto untreated polyester, diacetate and triacetate foils, polyamide and pre-treated polyolefines.

PK + PK-Jet For Special Applications

Developed for thermoplastics such as PVC and acrylics (PMMA) and due to their special binding agent system both ink systems are suitable for special applications such as printing of an extremely opaque white (PK-Jet 60/129-HD-NT), or an obliterating grey for double-sided stickers (colour shade 74), highly pigmented phosphorescent colours to be printed with very coarse fabrics (PK 96/...) or PK 70/36, a highly alcohol and fuel resistant protective varnish.

ONE COMPONENT SPECIAL INKS

RUB The Scratch Off Inks

RUB inks are a range of products for printing of rub off layers (silver-grey, gold, black, white), e.g. for lottery tickets. RUB inks are available in various degrees of hardness and upon request also in other colour shades.

LAB-N 331213 Oven Curing System

Oven curing inks LAB-N 331213 (140°C/20 min.) are extremely weather and solvent resistant. They also exhibit good elasticity. LAB-N 331213 inks are suitable for printing on aluminium, brass, copper as well as various coated substrates and can be formed after printing (cold). This range is used for front panels of white goods, for automotive badges and strips. A silicone-free adjustment is also available.



A The Old-Timer

Developed during the early days of screen printing, but still successfully used A inks dry by oxidation (by absorption of air) and are based on alkyd resin. This range of inks is mild, glossy and can be used for a variety of applications, however drying is very slow. Screen inks A are suitable for wood, coated surfaces, pre-coated sheet metal, many types of plasticizer-free thermoplastics as well as duroplastics.

INK RANGES

for Processing as One or Two Component Systems

Z/PVC The Tough Ink System

Gloss level: satin gloss

Drying speed: quick

Alternatively: hardener ZH/N or ZH, 10:1
(ZH only for indoor applications)

Good weather resistance,
high solvent resistance,
good abrasion resistance

Ink system Z/PVC has been especially developed for the production of highly resistant prints on PVC stickers for gas stations and automotive applications. Meantime it is also successfully used for other applications, such as PC or PC/ABS front panels of white goods or for printing of pre-treated polyolefines.

Z/PVC (Traffic Sign Ink) Highly Weather Resistant

Gloss level: glossy

Drying speed: medium / quick

Alternatively: 10:1 ZH/N

Very good outdoor resistance

Highly transparent special colour
shades for traffic signs on retro-reflecting
foils.

Z/PVC Traffic Sign Inks are a special modification of Z/PVC inks for printing on retro-reflecting PVC foils. This range is available in all common RAL traffic sign colours. Customer-specific colour shades are available upon request.

TZ Textiles & More

Gloss level: satin gloss

Drying speed: medium / quick

Alternatively: hardener ZH/N or ZH, 10:1
(ZH only for indoor applications)

Very flexible and elastic,
wash resistant,
also for textile transfers



Naturally TZ inks also show good results on cotton shirts. But the main purpose of this ink range are much more demanding applications such as printing of synthetic textile materials like windbreakers, sports bags, backpacks, umbrellas and sunshields (awnings). Due to significant differences those materials may have, pre-tests are always essential!

Very flexible and wash resistant TZ inks also exhibit excellent quality on artificial leather materials like Jeans labels or polyurethane materials of trainers and sandals. In addition TZ inks can also be applied to many TPE/TPU coatings (= Soft Touch surfaces).

In combination with hot melt adhesives TZ inks can also show good results in textile transfer applications.

ZE 1690 Foam Materials and More

Gloss level: semi- gloss

Drying speed: medium

Alternatively: hardener ZH/N or ZH, 10:1
(ZH only for indoor applications)

Very flexible and elastic

ZE 1690 is your first choice for printing of PU foam materials. ZE 1690 is also suitable for various TPE/TPU coatings (=Soft Touch surfaces) as well as other, partially very special plasticized PU and EVA substrates. This range is also used for textile applications such as goalkeeper gloves. ZE 1690 also shows acceptable results on vulcanised rubber, a material with a very problematic printability.

YN Polyolefines & More

Gloss level: glossy

Drying speed: medium

Alternatively: hardener ZH, 10:1

YN is a quite versatile ink system originally developed for screen printing on packaging materials (bottles, boxes, cans, containers) made of polyolefin plastics (PP, PE). Although, meantime these applications are increasingly carried out with UV curing products such as our ink type 80UV, YN is still a good choice for conventional screen equipment.



TWO COMPONENT INK RANGES

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Z The Resistant Ink System

Gloss level: glossy
Drying speed: medium
Hardener: ZH 4:1

Two component ink system Z is the best choice for difficult printing materials requiring high resistances against chemicals like solvents, grease, oils and more. Consequently Z inks are commonly used for technical-industrial applications such as printing on pre-treated formed parts and polyolefin (PP, PE) bottles/containers, polyamide (PA), duroplastics, front panels made of acrylic glass (PMMA), metals and coated surfaces. On account of the composition of the binding agent contained Z inks are not suitable for long-term outdoor applications. Z inks are available in many colour shades.

Z/GL Not Only for Glass

Gloss level: glossy
Drying speed: slow
Hardener: ZH/GL, ZH/02-GL, ZH/03-GL
all 20:1



For indoor applications, such as direct decoration of flat glass materials and also container glass, Z/GL inks are often an interesting alternative to energy-consuming ceramic stove inks. This ink system exhibits very good adhesion and scratch resistance, good dishwasher resistance, a high chemical resistance as well as good resistance against corrosion. C-MIX 2000 colour shades of Z/GL ink system are suitable for mirror coating applications. Z/GL inks are used for a variety of applications such as printing of cosmetic glass bottles, drinking glasses, ceramic cups (promotional articles) and also for decoration of flat glass elements (furniture industry), partitions, interior doors, shower cabinets, displays, cover plates for TV screens and also mirrors. Sometimes, after printing behind glass Z/GL is pressed with an intermediate foil and a second glass sheet to form a laminated safety glass. Furthermore, this ink system is also successfully used on chromium-plated surfaces, metals and duroplastics.

In addition to our standard colours Z/GL inks are also offered in various frosted glass effects as well as etching imitations.

ZM Weather Resistant I

Gloss level: glossy
Drying speed: quick
Hardener: ZH/N-00
(ZH only for indoor applications)
both hardeners 8:1

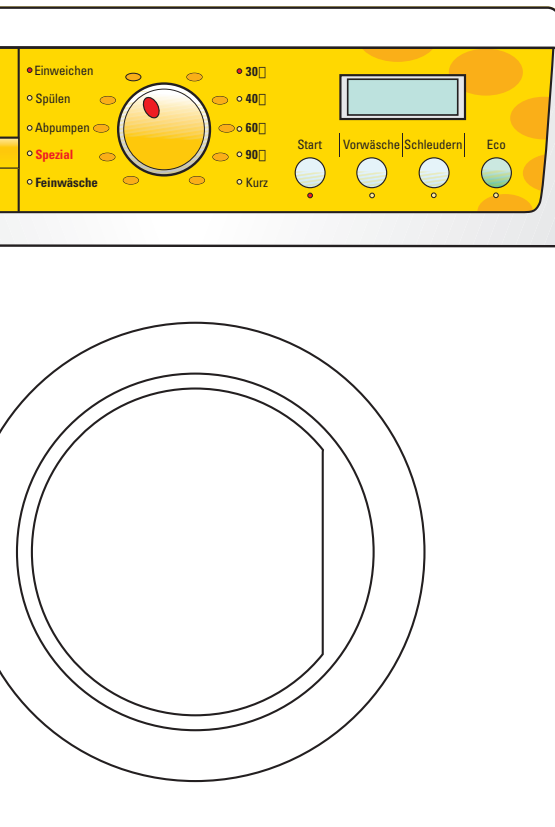
Ink system ZM has been especially developed using a combination of highly lightfast pigments and weather resistant binding agents for long-term outdoor use on outdoor resistant substrates. ZM inks are suitable for metals (aluminium, stainless steel, copper, brass etc.), coated surfaces, ABS, acrylic glass (PMMA), pre-treated polyolefines (PP/PE) and duroplastics. ZM prints show a good elasticity and are resistant against alkaline substances (detergents).



ZMN Weather Resistant II

Gloss level: glossy
Drying speed: quick
Hardener: ZH/N
(ZH only for indoor applications)
both hardeners 4:1

ZMN inks exhibit good outdoor resistance. They are an alternative to ZM inks, focussing on printing of polyolefines (PP/PE), especially crates. In addition ZMN inks are also suitable for ABS, acrylic glass (PMMA), various coated substrates, some chromium-plated plastics parts and metals such as aluminium. This ink range shows excellent light fastness and weather resistance. Prints are hard and scratch proof and show good resistances against alkaline cleaning agents and some solvents.



SPECIAL TWO COMPONENT INKS

Z/DD Extremely Resistant System

Gloss level:	glossy
Drying speed:	very slow
Hardener:	ZH/N, 3:1

Z/DD is a highly cross-linked two component system exhibiting very good outdoor resistance and excellent solvent resistance. Z/DD inks are mainly used for applications requiring extremely high chemical resistance possibly combined with long-term outdoor resistance; a combination of high resistances you may not be able to achieve with other two component inks such as Z, Z/GL or ZM and ZMN. We also offer two special protective varnishes Z 70/11-DD and Z 70/76-DD-AM (see chart "Special Varnishes")

TP 253 L The Silicone Rubber Ink

Gloss level:	glossy
Drying speed:	oven-curing 160°C/15 minutes
Hardener:	TP 219/L, 10:1



Actually TP 253 L is a pad printing ink. However due to the special binder base this ink type shows good results in screen applications as well. Silicone rubber materials such as swimming caps, bracelets, soft keyboards cannot be decorated with conventional screen inks. TP 253 L is an oven-curing special ink system suitable for printing many silicone rubber products.

SPECIAL VARNISHES

ONE COMPONENT VARNISHES

- HG 70/20:** Highly transparent. Used to adjust HG/N50 as smoky black (dead front effect) or to brighten the highly transparent colour shades of the HG 480 range.
- SG 70/15:** Alcohol and fuel resistant protective varnish for HG, CX, SG, RF-K and PK-Jet prints.
- PK 70/36:** Alcohol and fuel resistant protective varnish for HG, CX, SG and PK-Jet prints.
- CP 70/31:** Pre-print varnish for our rub off inks RUB.

TWO COMPONENT VARNISHES

- Z 70/114-PVC:** Extremely solvent resistant and quick drying two component protective varnish for prints made with HG, J and Z/PVC inks on PVC substrates.
- Z 70/76-DD-AM:** High gloss two component protective varnish for prints made with HG, J and Z/PVC inks. Shows very good alcohol, fuel and also outdoor resistance. Tough and elastic. Used for high quality automotive stickers.
- Z 70/11-DD:** Highly cross-linked, very chemical resistant two component protective varnish, also used as anti-graffiti varnish.
- Z 63/06-GL:** Semi-gloss, white-translucent effect varnish for printing on glass materials to produce frosted glass imitations or decorations.
Further effects such as mat or structure varnishes are available upon request.

Note:
For information about suitable substrates for these varnishes please kindly refer to the relevant product data sheets of our ink range or contact us directly.

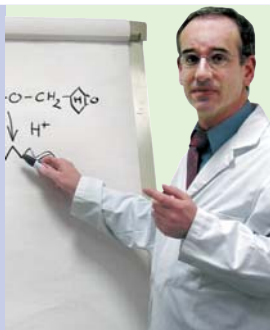
You cannot find the right ink for your special requirement or application?

We have much more to offer!

Just ask us. Your contacts are listed on page 16.

SUMMARY

2-COMPONENT INKS



INK TYPE	Z	Z/GL	Z/PVC	ZMN
MAIN APPLICATION	Printing of pre-treated polyolefines coated surfaces duroplastics	Printing of flat and container glass substrates ceramics metals	Printing of PVC foils	Printing of crates made of pre-treated polyolefines
ADDITIONAL APPLICATIONS	metals polyamide	duroplastics fibre	acrylic glass	acrylic glass
	to filling liquids variety of suitable substrates	very good resistance sterilization resistant	filling liquids good weather resistance Z 70/114-PVC, protective varnish for automotive stickers	cleaning agents hard and scratch resistant good weather resistance
Alcohol resistance	++	++	++	+
Hand sweat resistance	+	+	+	+
Hand cream resistance	++	+	+	+
Weather resistance	—	—	+	+
Gloss level	glossy	glossy	satin-gloss	glossy
Drying speed	medium	slow	quick	medium
COLOURS				
C-MIX 2000	x	x	x	x
Standard	x	x	x	
Standard HD	x			
4 Colour Process CMYK	x	x	x	x
PROCESSING				
Mixing ratio with hardener	2-component 4:1	2-component 20:1	1-component / 2-component 10:1	2-component 4:1
Type of hardener	ZH	ZH/GL ZH/02-GL ZH/03-GL	ZH/N ZH	ZH/N ZH
Thinner	VD 20 / VD 60	VD 10 / VD 20 / XVH	VD 30	VD 60
Retarder	VZ 25	VZ 20 / VZ 25	VZ 25	VZ 25 / VZ 40

++ = very good / + = good / o = medium / — = no or very little resistance / n. s. = not specified

SunChemical®

Coates Screen Inks

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ZM	ZE 1690	TZ	YN	Z/DD
Suitable for printing metals and laminated aluminium boards (e.g. Dibond)	Printing of vulcanised rubber thermoplastic elastomers synthetic fibres	Printing of textile materials made of natural and synthetic leather	Decoration of packaging materials made of pre-treated polyolefines, rigid PVC and polystyrene	Printing of coated surfaces metals thermoplastics
thermoplastics duroplastics	foam materials polyurethane	artificial leather polyester, polyamide soft touch surfaces	metals coated surfaces Chromolux thermoplastics	duroplastics pre-treated polyolefines
alkaline resistance elastic high weather resistance	highly elastic forming resistant	flexible washing resistant good solvent resistance	good resistance against alcohol, water and chemicals large variety of substrates	extremely resistant to solvents extremely weather resistant very high abrasion resistance
—	0	+	+	++
+	+	+	+	++
+	n. s.	n. s.	+	++
+	+	+	0	++
glossy quick	semi-gloss medium	satin-gloss medium / quick	glossy medium	glossy very slow
	x	x	x	x
x		x	x	
x	x	x	x	
2-component 8:1 ZH/N-00 ZH	1-component / 2-component 10:1 ZH ZH/N	1-component / 2-component 10:1 ZH ZH/N	1-component / 2-component 10:1 ZH	2-component 3:1 ZH/N
VD 60 VZ 25 / VZ 40	VD 30 / VD 20 VZ 05 / VZ 25	VD 20 / VD 60 VZ 25	VD 30 VZ 25 / VZ 40	VD 20 / VD 60 VZ 25 / VZ 40
				Z 70/76-DD-AM protective varnish for automotive stickers

COLOUR RANGES

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C-MIX 2000

Brilliant, mono-pigmented colour shades, for mixing of Pantone, RAL, HKS and other colour shades.

The 12 semi-opaque or transparent colour shades of the C-MIX 2000 system are suitable for the exact mixing of shades of various colour systems or of specific corporate colour shades. They exhibit special suitability for matching of brilliant Pantone or HKS colours. On account of this mono-pigmentation (every base colour only contains one pigment) easy and quick matching of any colour sample is possible. Our database

Formula Management C-MIX 2000, which is available free of charge, contains guide-formulations of Pantone, HKS and RAL colours. There are separate formulations for one and for two component screen inks. Just like Pantone and HKS colour swatches, formulations of C-MIX 2000 shades are mainly suitable for printing on white or very bright surfaces.

Standard Colour Shades

The classic colour range. Strong colour shades with medium opacity.

Our standard colour shades 10, 11, 12 etc. represent our classic colour range, developed before Pantone and other colour systems became popular. Printers can choose any colour from several yellow, red, blue and more shades. The

colours of this standard range mostly contain more than one pigment, exhibit high colour strength and medium to good opacity.

4 Colour Process Shades

Special shades for four colour process printing (CMYK).

4 colour process screen printing technology (CMYK) is very suitable for reproduction of high resolution images. In addition to our special process range RF/K, process colours are also offered in several other ink ranges.

Our process colours are: process yellow 180 (= Y), process red 181 (= M), process blue 182 (= C) process black 65 (= K). Also transparent paste "TP" is offered in case adjustment (=brightening) of colour brightness is necessary.

480 Colours

Highly transparent colour shades.

8 especially pure and transparent colours for printing on transparent materials such as coloured LED displays of membrane switch overlays. Available in HG ink range. Upon request

480 colours can also be offered in other screen inks.

90 and 96 Colours

Fluorescent and phosphorescent colour shades.

90 range: 6 colours with a high colour strength and fluorescent effect. Available in ink range TL. Upon request these shades can also be offered in other ink ranges

96 range: Phosphorescent white-yellow colour adjustments. We offer various adjustments with different phosphorescence for security applications and decoration of advertising articles. Available in ink range PK, and upon request also in other ink ranges.

Standard HD Colour Shades

Colour shades exhibiting unsurpassed opacity.

12 colour shades (10 colours, black and white) of our standard HD colour range have been formulated with a very high concentration of extremely opaque pigments to achieve best

possible opacity of screen prints. Standard HD colours are available in many screen ink ranges of our program.

Bronze Colours

All that glitters is not gold...

Gold, Silver, Bronze. We offer four different colours: B, AB, MG and MI.

B-Bronze colours are highly opaque and available as ready-to-print adjustment or in paste or powder forms. These pastes and powders are used for mixing with our E50 varnish, also available within our ink ranges.

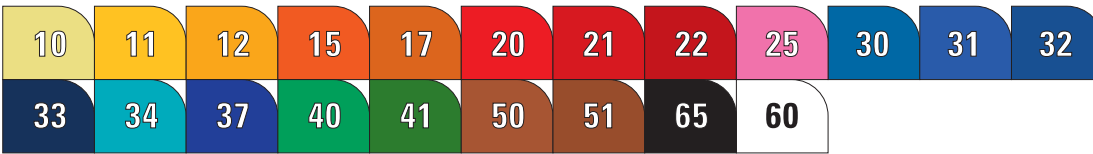
AB-Bronzes are available as ready-to-print adjustments. They show good resistance against

smearing and leafing as well as good opacity and brilliance.

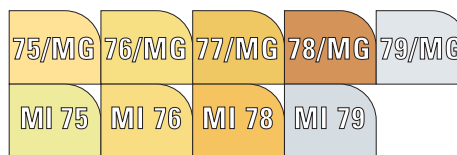
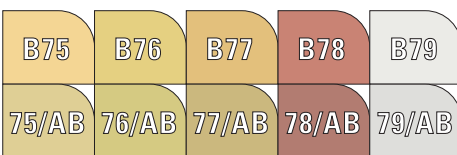
MG bronzes (= metal gloss) are very brilliant and have a medium opacity.

MI bronzes are mirror gloss inks for printing behind glass. Contrary to other bronzes MI bronzes are only available in one ink range MI.

In addition we offer a variety of silver, pearl-gloss and interference effects.



For technical reasons the colour shades printed in this brochure do not show exact colour strength and shade. For exact colour shades please refer to our colour cards, which can be obtained upon request!



AUXILIARY AGENTS / ADDITIVES



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For more than 50 years Coates Screen Inks GmbH screen printing inks have been successfully processed under various conditions. Apart from a few special ink types our screen printing inks are not delivered in a ready-to-print adjustment so that printers all over the world can fine-tune our inks to their specific local processing requirements. Coates Screen Inks GmbH offers an extensive range of well-balanced auxiliary agents.

Below please find a summary of our most important thinners, retarders, hardeners and other useful additives.

Thinners and Retarders

Thinners and retarders are mixtures of organic solvents. They have different rates of evaporation and various degrees of solving power. Addition of thinners and retarders to screen inks will adjust the printing ink to meet local processing requirements such as viscosity, screen stability and drying speeds.

Thinners have medium to fast evaporation rates. Addition to our screen inks is approx. 10 - 30%. If necessary a combination of thinner and retarder is also possible.

Retarders have slow to very slow evaporation rates. They are only added if, due to local processing conditions screen stability cannot be achieved using thinners by themselves. Usually retarders are used in addition to thinners.

Depending on type of retarder used, drying speed of inks may be slowed-down significantly.

Thinners

VD 60

VD 60 is a universal thinner with good solving power and a medium evaporation rate. This thinner can be used as standard thinner for most one and two component screen inks printed with medium printing speeds on semi-automatic and three-quarter printing equipment.

VD 50

Good solving power, medium evaporation rate. VD 50 is quicker than VD 60 and is a good alternative when an ink has to be adjusted to be slightly quicker.

VD 40

VD 40 is a quick "aggressive" thinner with a high solving power.

VD 30

Fast thinner, especially suitable for printing of ink types CC, J, PK-Jet and YN at high speeds.

VD 20

This is a very quick thinner with good solving properties suitable for processing at high printing speeds on three-quarter and semi-automatic printing equipment.

VD 10

VD 10 is a very mild and quick thinner of XL ink range. VD 10 can also be used as mild alternative thinner for high speed printing of HG, CX and CP inks, or for printing onto tension-sensitive plastics. VD 10 can also be used as mild cleaning agent, e.g. to remove misprints.

XVH

XVH is mild like VD 10, however with a medium evaporation rate. XVH is standard thinner for XL ink range and can be used as mild alternative thinner for HG, CX and CP inks. In addition it also shows good suitability for Z/GL inks. XVH is used for medium printing speeds.

Retarders

Retarder VZ 05

Retarder VZ 05 has a high solving power and medium retardation. Among others suitable for ink ranges J, TZ.

Retarder VZ 10*

Retarder VZ 10 has a good solving power and medium retardation.

Retarder VZ 20*

Retarder VZ 20 has a medium solving power and a good retardation.

Retarder VZ 25

Retarder VZ 25 shows a good retardation and good solving power.

Universally applicable, also well suited for 2 component inks.

Retarder VZ 30*

Retarder VZ 30 shows a quite low solving power, but a strong retarding effect. Recommended addition is approx. 3-5%.

Retarder VZ 40

Retarder VZ 40 has a strong retarding effect and good solving properties.

Recommended addition of this retarder is approx. 3-10%.

VZ 40 is also suitable for 2-component inks.

*

Can be used for one component inks.

Not recommended for 2 component inks mixed with hardeners ZH, ZH/N, ZH/N-00.



Retarder Paste

Retarder pastes are “thickened” retarders which can be used as an alternative to or addition to liquid retarders. They are mainly used for printing of fine details requiring paste form or thixotropic viscosities of inks used. Addition of large amounts of retarder paste will reduce gloss degree of the printing ink.

Retarder Paste LAB-N 111420/VP

LAB-N 111420/VP can be used in nearly all our solvent based screen ink ranges.

This paste has antistatic properties. Addition to inks will result in a slightly gel-like thixotropic structure.

Recommended addition is 5-10%.

Retarder Paste VP/K

Retarder Paste VP/K has a strong solving power and is suitable for ink ranges RF/K, CX, CP, SG, PK and PK-Jet. Up to 10% can be added.

The following chart lists the most essential properties of thinners and retarders offered by Coates Screen Inks GmbH

PRODUCT	EVAPORATION RATE	FACTOR	SOLVING POWER	SUITABILITY
VD 10	▶ very quick	0,12	▶ mild	all 1-Comp. inks and Z/GL
VD 20	▶ fast	0,2	▶ strong	universal
VD 30	▶ fast	0,22	▶ strong	universal
VD 40	▶ fast	0,25	▶ very strong	universal
VD 50	▶ medium	0,6	▶ medium	universal
VD 60	▶ medium	1	▶ medium	universal
VZ 05	▶ medium	1,15	▶ strong	CC, J, TZ
XVH	▶ medium	2	▶ mild	1-Comp. inks and Z/GL
VZ 10	▶ medium	2,3	▶ medium	1-Comp. inks and Z/GL
VZ 20	▶ slow	5	▶ medium	1-Comp. inks and Z/GL
VZ 25	▶ slow	5	▶ medium	universal
VZ 30	▶ extremely slow	9	▶ low-medium	1-Comp. inks and Z/GL
VZ 40	▶ very slow	7	▶ medium	universal

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Hardeners

Hardeners are the second constituent of two component inks. They are added to the ink at ratios individually calculated for each ink range. This mixing ratio, e.g. 10:1 (10 parts ink : 1 part hardener) always refers to undiluted ink. Thinner is always mixed in after hardener addition. The chemical reaction of both components starts as soon as the ink is mixed with the hardener. For that reason the ink has to be processed within a certain period of time (pot life), mostly within a few hours.



Pot life varies from ink range to ink range. Inks should not be printed after this period of time as then the printed ink film will not exhibit the required resistances due to the progressed cross linkage reaction with the hardener. Following initial drying 2-component inks will require periods of up to 6 days (depending on curing temperatures) to achieve a complete cross

linkage. In that respect store room temperatures are also essential as the different hardener types require minimum temperatures to react (see information below).

Resistances can only be evaluated when the curing reaction is complete. Please refer to the detailed information in our product data sheets of the individual two component ink ranges. Hardener containers must always be tightly closed and stored in a dry environment as hardeners react with humidity!

● Hardener ZH

Hardener for ink ranges YN, Z, also suitable for TZ, ZE 1690, ZM.

Reaction temperature: from 15°C.

Not recommended for outdoor applications as ZH has a tendency to yellowing.

● Hardener ZH/N

Hardener for ink ranges Z/PVC, TZ, ZMN, ZE 1690, Z/DD

Reaction temperature: from 20°C.

Recommended for outdoor applications in suitable ink types.

● Hardener ZH/N-00

Hardener for ink range ZM.

Reaction temperature: from 20°C.

Recommended for outdoor applications in suitable ink types.

● Hardener TP 219/L

Hardener for ink range TP 253 L

Reaction temperature: 160°C/ 15 minutes.

SPECIAL HARDENER FOR INK RANGE Z/GL

● Hardener ZH/GL

Reaction temperature: from 20°C, when oven curing at 140°C/20 minutes. Prints show a very good water resistance.

● Hardener ZH/02-GL

Reaction temperature: from 20°C, when oven curing at 140°C/20 minutes. After oven curing prints have a good water resistance.

● Hardener ZH/03-GL

Reaction temperature: from 20°C, when oven curing at 140°C/20 minutes. Prints already exhibit good chemical resistance after air drying.

For detailed information regarding hardener and addition please refer to the product data sheets.

AUXILIARY AGENTS / ADDITIVES

Anti Static Agents



Static charge is often quite problematic when printing onto plastics. Electrostatic charge mainly shows as ink spots or stringing ("spider threads") at the edges of the printed image. To avoid static charge it is necessary that the surface of the materials and the surrounding area are sufficiently

conductive. Sufficient thinning of the ink and a relative humidity of 55 % and more in the print room are essential in such cases. A further possibility is addition of anti static agents to the ink, these agents are offered in two different types.

● Wiestostat N

Anti static agent in liquid form which may be added to all our screen inks in order to increase their conductivity. Addition is approx. 1-5 %.

● Antistatic Paste LAB-N 111420

Antistatic paste LAB-N 111420 is a slightly yellow, clear and gel-type paste, which can be easily added to screen inks. It is suitable for all our solvent based screen ink types and must be thoroughly stirred into the undiluted ink.

Addition is approx. 5-10 % depending on static charge.

Flow Agents



Caused by interactions between substrate, printing ink and printing conditions problems such as bubbles, pinholes, orange peel or the like may occur on the surface of the printing ink film. In order to eliminate such undesired effects certain additives, so-called flow agents, can be mixed into the screen printing ink.

Mostly only small amounts of additives are mixed into the inks. Therefore it is essential that these auxiliary agents are stirred in very thoroughly to achieve the required effect. Most additives should be mixed into the inks using efficient mixers/agitators/dissolvers or shakers (see chart below).

However, all additives, especially flow agents should be added carefully and the amounts listed below should not be exceeded.

Summary Additives

	Form	Addition	Add using	Overprintable
Flow Agents				
- VM1	liquid	1-5%	mixer/stirrer 2 minutes	no
- VM2	liquid	0,3 - 0,5%	mixer/stirrer 2 minutes	no
- VM3	liquid	1-5%	mixer/stirrer 2 minutes	yes
Anti Flotation Agent	liquid	3-5%	dissolver* 10 minutes	yes
Antistatic Agent Wiestostat				
- Wiestostat N	liquid	1-5%	mixer/stirrer 2 minutes	yes
- LAB-N 111420	paste	5-10%	manually	yes
Thickening powder	powder	2-3%	dissolver* 10 minutes	yes
Matting agent	powder	3-5%	dissolver* 10 minutes	yes

* Dissolvers are extremely powerful disc mixers with a high shearing power allowing very effective mixtures of certain additives with printing inks.

SUITABILITY CHART: SOLVENT BASED SCREEN INKS - SUBSTRATES

Substrate	1-component											1 and 2-comp.					2-comp.					
	A	CP	CX	HG	J	LAB-N	PF	PK/PK-13	PP	RF/K	TL	XL	TZ	YN	ZE 1690	Z/PVC	TP	Z	Z/DD	Z/GL	ZM	ZMN
	①	①	①	①	①	①	①	①	①	①	①	②	②	②	②	③	③	③	③	③	③	③
	⊗					1							10:1	10:1	10:1	10:1	10:1	4:1	3:1	20:1	8:1	4:1 Hardener Addition
Paper, Cardboard, Carton		●	●	●		●				●												
Plasticized PVC		●	●	●	●		●		●	●	●				●							
Rigid PVC	●	●	●	●	●		●		●	●	●	●	●		●							
Polystyrene		●	●	●	○		●		●		●		●									
ABS, SAN		●		●			●				●		●		●		●			●	●	
Polycarbonate (PC)		●	●	●	●		●		●	●	●		●		●		●	●		●	●	
Acrylic Glass (PMMA)	●	●	●	●	●		●		●	●	●		●		●		●		●	●		
Polyester Foil (with ink adhesion primer) for membrane switch overlays				●	●					○												
Polyester (PET)*					○	○	●						●				●	●				
PET-G**		○		○							●											
Polyamide (PA) (flame pre-treatment recommended)						●						●	●				●				●	
Polypropylene (PP) pre-treated						●		●					●		●		●	●		●	●	
Polyethylene (PE) pre-treated																						
Polypropylene (PP) (without pre-treatment)								●														
Polyacetal (POM) (post-treatment by flame required)													●				●			●	○	
Polyurethane (PUR)*				○	○							●		●								
Silicone Rubber																●						
TPE/TPU*, Rubber, Artificial Leather**												●		●								
Duroplastics	●				●								●				●	●	●			
Textiles*, Leather*												●		●								
Metals	○				●								●				●	●	●	●	●	●
Coated Surfaces*	●		●	●	●	●										●	●					●
Glass																				●		
Wood	●												●									

* material is available in many quite different types

** material may be very sensitive to tension cracks

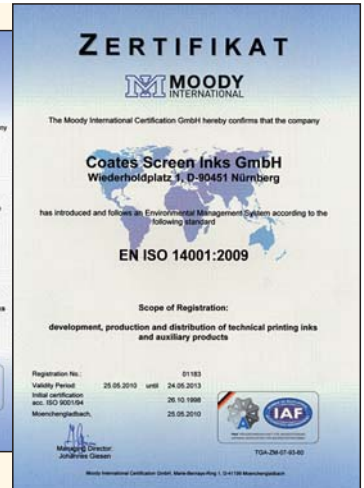
- preferred for the application
- suitable
- may be suitable

- ① One component
- ② One and two component
- ③ Two component
- 1 Oven curing 140°C/20 min.
- 2 Oven curing 160°C/20 min.
- ⊗ Oxidative drying

This information is no guarantee for the suitability of screen printing inks for certain substrates but is intended to help the user to choose suitable ink types. Pre tests are always necessary. This information is based on our present experiences (December 2012).

SAFETY AND QUALITY

Coates Screen Inks GmbH is a certified "Sony Green Partner"



Naturally Coates Screen Inks GmbH also has **ISO 9001** and **ISO 14001** certification.

All our screen printing inks are in conformity with the following guidelines:

- REACH** New European Chemical Regulation
- EN 71/3** Safety of Toys
- RoHS** European Directive 2011/65/EU (recast of RoHS directive 2002/95/EG), restriction on the use of certain hazardous substances in electrical and electronic equipment.
- GADSL** Global Automotive Declarable Substance List. GADSL list of forbidden substances and duty of declaration for automotive products.
- EuPIA** Raw material exclusion list for printing inks of the European Printing Ink Association.

Technical Support:

This brochure "Solvent Based Screen Printing Inks" is a summary of our solvent based screen ink range. For detailed information on individual products please refer to the relevant product data sheets. You cannot find the screen ink you were looking for? Please contact us. We have much more to offer!

For technical assistance please contact us:



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