

FLEXIBLE PACKAGING

Flexible Packaging Newsletter · EMEA Edition



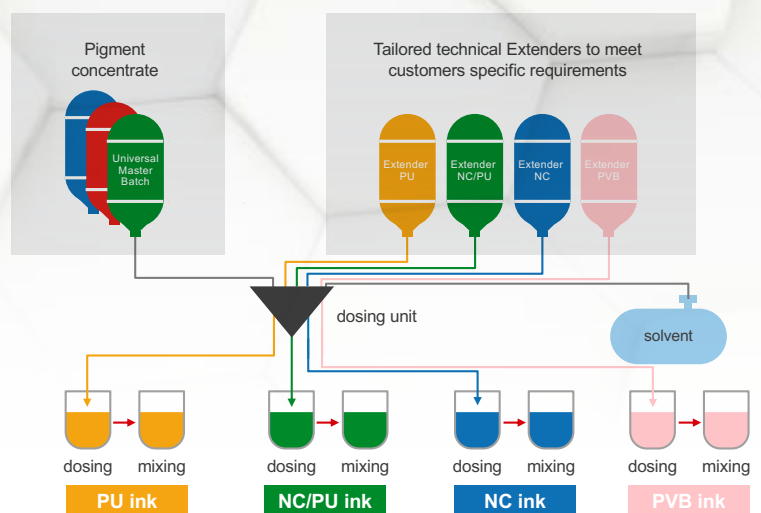
UNIVERSAL CONCENTRATE SYSTEM

for maximum efficiency in gravure printing!

With Siegwerk's innovative modular system, all the required ink solutions tailor-made for 'the specific requirements of a specific job can be processed from just one dispensing system.

It is compatible with all conventional binders and thus designed for universal use across the entire range of gravure printing applications.

Example set-up of a universal masterbatch system



Siegwerk's universal masterbatch system for gravure printing applications enables printers to process printing inks specific to order for the entire performance spectrum with the help of a single dispensing system concept. Masterbatch systems available on the market today are generally based on nitrocellulose (NC) making them unsuitable for high-performance applications such as retort or pasteurization.

Whereas, Siegwerk's unique ink concentrate system can combine pigment concentrates with different master compounds (technical varnishes) and various binder compositions (e.g. NC, PVB, PU/NC, PU).

Based on this approach, independent of binder, this can be used universally for all application areas of gravure printing – from high-end applications in reverse printing through to standard lamination and surface printing. Whether printing high-performance PET/Alu laminates, for example for stand-up pouches with high temperature stability or medium performance OPA/PE laminates, for example for cheese packaging, Siegwerk's masterbatch system offers the maximum range of applications in gravure printing.

This enables printers to simplify processes, reduce ink storage and lower operating costs to continuously increase their efficiency.

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In demand

INSIGHT INTO SIEGWERK'S UNIVERSAL MASTERBATCH CONCEPT



Björn Ewig is Regional Director Technology Development EMEA Flexibles at Siegwerk and has closely monitored the development of the unique, universal concentrate system through to today's commercialization.

Björn Ewig, how does the innovative concentrate system work exactly? "The core of our universal masterbatch system are pigment concentrates that are compatible with all relevant binders and additives. By combining these masterbatches with the so-called mastercompounds which contain all components for a binder, we can tune the performance of the system exactly towards the requirements of each print job. That means that we can implement tailor-made ink solutions for the entire application portfolio of each individual customer with a single set of pigment concentrates.

By massively reducing the complexity, the space required in the ink storage room is e.g. reduced. Thus, our ink concentrate system makes it possible to achieve the maximum performance spectrum tailored to individual requirements while minimizing storage space. Without a comparable masterbatch system, multiple products would be required.

Consequently, the storage of special ready-made ink systems, e.g. for the high-end area, is no longer necessary with this universal concentrate system – one additional compound or blend is enough."

What are the benefits of the system? "Today, different application segments are covered with various ink concentrates. Our innovative modular system now simplifies this by serving the same needs, but with fewer components. On the basis of the universal masterbatch, in combination with various mastercompounds, we can serve the entire application range in gravure printing via a dispensing system.

This universal application ensures lower machine set-up times, less waste and more efficient handling in the ink room with the result of higher cost-effectiveness. We offer our customers the unique opportunity to simplify their product portfolio radically with just one ink concentrate system. In particular, for production portfolios with a diverse performance spectrum, the demand for individual binder-based printing ink products can be significantly reduced by the modular system.

What exactly is the benefit for the customer? "Based on individual customer requirements, we provide tailor-made blends and master compounds that cover all required performance levels. At the same time the system is very flexible and future proof. If the customer's requirements change an adaptation is possible at any time. If a new performance level is required, there is no change and hence also no re-qualification - needed for the existing portfolio, only one new mastercompound is added to the system.

The concentrate system offers customers the security that all ink solutions, recommended by Siegwerk for each application requirement, are available in a qualified structure. This also offers high design flexibility in terms of the cost structure. For example, should we use pure PU inks for printing a sterilizable packing solution or do costs need to be kept lower by using PU/PVB mixtures? This decision can be made easily and job-specific with our concentrate system, without compromising on quality and efficiency. For this purpose, it is essential to have a continuous exchange between the customer and our application technology department, so that the ink solutions provided by the masterbatch system also meet the requirements of the job portfolio to be handled."



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PU inks are used for example for high-performance applications such as stand-up pouches, which require excellent bond strength values of the ink as well as a high temperature stability of laminates for sterilization processes (~130°C).



One example for the use of NC/PU inks is non-retort standard pouches such as portion packets of ketchup. What is especially crucial here is the high bond strength value between the laminated foils.



NC inks are used for surface printing of hygiene packaging, for example, where good scratch resistance, high sealing resistance and good ink adhesion are required.



PVB inks are used for example for printing sausage casing, which need a very high resistance against scratches, grease and temperature as well as excellent adhesion.

To what extent does the system support a reduced use of PVC?

"In the course of ongoing discussions on sustainability, many brand owners are meanwhile committed to using recyclable packaging and completely forgoing PVC. Our universal masterbatch system already helps today in producing PVC-free packaging solutions, and due to the universal approach, without too much effort in switching to for example PVB or PU mastercompounds as a sustainable alternative."

How is the commercialization of the system progressing?

"In 2018 we already launched the masterbatch system on the market with a PU mastercompound. Since then, it has been successfully tested by customers and rated as very good both in terms of print quality and technical performance. Next comes the step-by-step rollout of additional mastercompounds on NC/PU-, NC- and PVB basis, which make it possible for our customers to fully utilize the benefits of our universal concentrate system."

Do you want to find out more?

Then get in touch with us at: info@siegwerk.com

The advantages at a glance:

- Significantly reduced complexity of product portfolio
- Future proof through easy performance adjustment by change or addition of only one component
- Frees up ink dosing system
- Job specific cost optimization
- Reduced storage and handling
- Less cleaning and faster change over due to compatibility of ink system
- Excellent printability – even at high printing speeds
- Ethyl acetate based concentrates enable the use of solvent recovery systems

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Update

New High Definition flexo ink series successfully tested with leading flexo printers

Siegwerk's new NC-based ink concentrate has been developed to meet specially tailored requirements for the implementation of High Definition in flexo printing. First ink series for surface and reverse printing are now capable of implementing HD flexo with leading printers.

With the NC 187 series Siegwerk already offers a commercially tested HD flexo ink for surface printing, which is currently qualified for hygiene packaging. Printing inks for additional surface printing applications such as for example deep-freeze packaging or packaging for the areas exposed to weather are also in the development stage and have already been tested in the laboratory. Initial customer tests will follow shortly. All existing tests confirm a significantly better resilience to external weather and scratch resistance compared to conventional NC surface printing series. With the HD flexo ink series NC 228 Siegwerk also offers a newly-developed reverse printing solution for for example pet food packaging, coffee pouches as well as lid packaging for cheese and sausage. Initial customer tests show a high color intensity and a good printability with comparable adhesion values in application structures such as for example PET/ALU/PE.

Overall, the new NC-based masterbatch system has already been tested successfully with numerous customers and market partners in recent months on state-of-the-art industrial machines for HD flexo printing. All confirm the excellent ink performance and print quality of the new ink technology:

- excellent printer results
- very high color density

- good print performance in HD flexo printing
- no drying out and easy cleaning of anilox rolls
- good scratch resistance
- stronger dot sharpness
- good rheological properties and good flowability
- quick setting up with easy handling in the ink storage room and on the machine
- 30-35% blend addition to achieve the target-densitometry possible
- tone value gain constant
- high gloss and high brilliance of colors

All Siegwerk HD flexo ink series are thus not only exclusively suitable for High Definition use, but can also be used with the correspondingly different blend compositions for all associated performance levels in standard flexo printing. With the newly developed ink concentrates, Siegwerk therefore offers an innovative and high-performance flexo ink system – completely optimized for use in standard and HD flexo printing.

If you are interested, feel free to contact us on flexible.packaging@siegwerk.com

HIGH DEFINITION FLEXO PRINTING ►

- Today considered a suitable alternative to offset and gravure printing
- Many flexo ink systems are not yet optimized for HD flexo
- High technical ink requirements:

- high ink density despite very low ink film thicknesses
- high color strength
- low adhesive tack while consistently maintaining good adhesion values
- sufficient scratch resistance
- slow drying for a cleaner ink transfer even with slow printing speeds and very fine printer dots



EFFECT INKS

Metal effect pigments

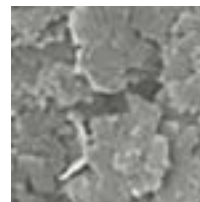
High-quality metallic surfaces can be simulated by using high gloss metallic printing inks. Metal effect pigments provide glossy colors and a luxurious appearance. By specifically applying gold and silver sheen, surprising lighting and reflective effects can be created on the packaging, and consequently the product can be displayed in an eye-catching way. For this reason, metallic inks are often used for high-quality food, luxury or tobacco packaging.

1. STERLING SILVER



TECHNICAL BACKGROUND:

- Sterling silver pigments are produced in ball mills, in which aluminum powder is ground and formed into platelets (flakes).
- The production-related irregular surface leads to an undirected reflection and thus a scattering of light across the entire metal surface.
- The metallic brilliance depends on the reflective properties of the metal pigments used. The more even and thinner a pigment particle, the more directed the reflection and the higher the metallic brilliance.



Depending on the flatness and thickness of the metal pigments used, another metallic brilliance of the ink can be created.

EFFECT:

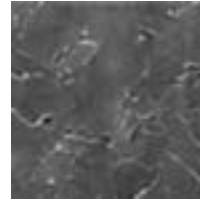
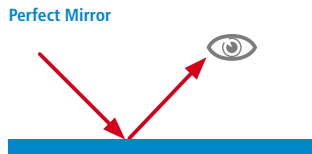
- attractive silver gloss
- conveying a high-quality impression
- simulating large metallic areas and subtle design refinement in the form of fine lines

APPLICATION EXAMPLES:

- labels for drinks such as water, beer or spirits
- cold-seal packaging for chocolate and snacks
- sleeves for cosmetic products
- seasonal packaging such as for Christmas



2. HIGH GLOSS SILVER



High gloss silver generates perfect mirror effect on printed surfaces.

TECHNICAL BACKGROUND:

- High gloss silver pigments are formed by first vacuum vaporizing or metallizing a film with aluminum and then this metallization is washed off with solvents. The mass (slurry) created forms the starting point for the formulation of a high gloss printing ink.
- The production-related very thin and flat surface of the pigments creates a highly directional reflection of light, resulting in a unique mirror effect.

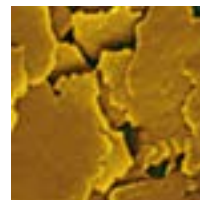
EFFECT:

- attractive silver gloss to a mirror effect
- creating a luxurious and elegant look
- simulating large metallic areas and subtle design refinement in the form of fine lines

APPLICATION EXAMPLES:

- labels for drinks such as water, spirits or energy drinks
- packaging for candies and chocolate
- sleeves for high-quality cosmetic products
- packaging for luxury products

3. BRASS GOLD



Gold reflective effect thanks to the regular surface of the brass pigment.

TECHNICAL BACKGROUND:

- For the production of brass gold pigments, brass powder is ground into ball mills and formed into small platelets (flakes).
- The regular surface and the specific color of the brass pigment leads to a directional reflection and thus a mirroring of the light in the gold.

EFFECT:

- high-quality gold sheen
- gives the packaging an exclusive look
- emphasizes an elegant and high-quality product design

APPLICATION EXAMPLES:

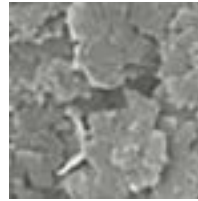
- labels for drinks: beer, wine and spirits
- packaging for candies and chocolate
- cardboard packaging and labels for high-quality cosmetic products
- Seasonal packaging such as for Christmas

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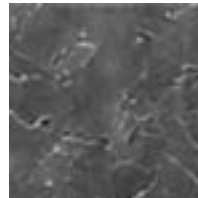
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Metallic Brilliance



Perfect Mirror



Depending on the aluminum pigments used (fine flakes (s.l.) vs. vacuum metalized pigments; VMP (s.r.)) an alugold effect can be generated depending on the gold coloring of the pigments in different levels of metallic brilliant through to a mirror effect.

4. ALUGOLD

TECHNICAL BACKGROUND:

- For the manufacture of alugold, aluminum pigments are combined with organic pigments.
- To achieve the golden tint, yellow and orange pigments are used. The golden sheen is then produced by a combination of silver pigments and an orange pigmented varnish.
- The organic colored pigments can be used either directly for pigmentation of the aluminum color, or they are preprinted as gold varnish in reverse printing or also in surface printing via alu color.
- To achieve a high brilliance, the pigments must have a high transparency.
- The gloss level is essentially defined by the flatness and thickness of the aluminum pigment used – all combinations are possible from flake to high gloss silver.

EFFECT:

- high-quality gold sheen
- gives the packaging an exclusive look
- emphasizes an elegant and high-quality product design

APPLICATION EXAMPLES:

- labels for drinks: beer, wine and spirits
- packaging for candies and chocolate
- cardboard packaging and labels for high-quality cosmetic products
- seasonal packaging such as for Christmas

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Siegwerk's PU gravure printing inks

MARKET TESTED & HIGHLY EFFECTIVE

Siegwerk has a comprehensive portfolio of highly effective printing inks on polyurethane (PU) basis for packaging print. With the highly functional ink system UR 22/UR 21 the company offers a market-proven solution specifically for high-performance applications in gravure printing.

The UR 22 ink system and the accompanying UR 21 white ink system were developed in 2015 as the first PVC-free generation of ink for gravure printing, which are based on a polyurethane binder system. With its high bond strength, the printing ink palette is considered to this day a proven alternative to PVC inks for the high-performance area. It has already been used industrially for years by customers for reverse printing of high-performance laminates with successful results.

The PU chemistry of the gravure printing ink series has been constantly developed and improved since then. The latest version of the ink system now contains a completely new PU combination, which Siegwerk has developed specifically for the UR 22 system. The new binder will be made in Siegwerk's own production facility in Annemasse, France.

A large amount of customer feedback confirms the excellent suitability of the ink system for sophisticated applications in the high-performance area. "Customers value, above all, the great efficiency and high print quality of the PU gravure printing ink system," explains Stefan Busse, Regional Director Application Technology, Flexible Packaging EMEA at Siegwerk. The ink solution is particularly distinguished by excellent adhesive properties on a variety of film types, which are not covered by other comparable ink systems.

"The system is best suited for use in reverse printing and can also be used with modern barrier film substrates," adds Stefan Busse. Particularly on account of this good, robust performance, the ink system today is often used for stand-up pouches for pet food or ready-made meals, which more and more frequently feature a viewing window to see the contents inside, or also for high-quality lidding material of coffee capsules.



The ink technology is thus always precisely tailored to the specific application requirements of a customer, to support the individual purpose of each packaging solution optimally. In addition, it is always formulated in compliance with the relevant product safety standards.

Currently Siegwerk is working on the further reduction of the already low alcohol concentration of today's system, to also allow customers with solvent recovery systems to enjoy the capability of this ink technology.

Have we sparked your interest? Then contact us on flexible.packaging@siegwerk.com

Key data UR 22/UR 21:

- many years of proven high-performance ink for composite materials
- PVC-free
- suitable for a variety of film types (PET, AlOx-PET, SiOx-PET, OPA, OPP and many more)
- very high composite strength
- excellent print quality
- better color strength compared to PV inks
- extremely low residual solvent retention

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CIRCULAR ECONOMY

Siegwerk supports CEFLEX in the optimization of flexible packaging solutions

Siegwerk joined the CEFLEX Initiative 2017 as the first printing ink manufacturer to help constantly improve the efficiency and recyclability of flexible packaging and thus, coordinate them optimally in the Circular Economy.

“CEFLEX is the most important and most solution-oriented industry initiative for flexible packaging,” explains Jörg-Peter Langhammer, Head of Global PSR + Sustainability at Siegwerk. “It offers a perfect platform for specialists from other areas to network and exchange information.” The purpose of the initiative is to shape the future of flexible packaging with new concepts and innovation together, while at the same time developing an efficient infrastructure for the collection, sorting and recycling and to implement this successfully.

Siegwerk’s focus is naturally on printing inks and varnishes and its role for innovative flexible packaging in the context of the Circular Economy. The expertise of the company is applied, for example in the new design guidelines for flexible packaging, as well as in the discussion about the influence of inks and printing layers on the automatic sortability of flexible packaging waste. Further examples of discussion topics are the removal of printing inks and varnishes during the recycling process (deinking) for the purpose of quality improvement of recyclable material, as well as the influence of printing inks in the context of advanced recycling technology such as the chemical recycling or solvolysis.

CEFLEX is the joint initiative of a European consortium of more than 100 companies and associations, covering the entire value-added chain of flexible packaging.

The project objective is to continue to improve the performance of flexible packaging in the Circular Economy, by finding better solutions in system design through cooperation. CEFLEX and the project participants fully recognize the goal of a 100-percent collection and re-use of all plastic packaging.

More info at www.ceflex.eu

Together with CEFLEX, Siegwerk fully supports the global commitment and the accompanying joint vision of the Ellen MacArthur Foundation (EMF) for a “New Plastics Economy,” which strives for a future in which plastics, including flexible plastic packaging, never become waste and comply with the Circular Economy. The company’s strong commitment in the CEFLEX network demonstrates the aspiration for a leading role in sustainability and product safety. This is one of a series of Siegwerk’s diverse activities in actively shaping the future of packaging with innovative and sustainable ink solutions.

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LIGHTHOUSE PROJECT 2019

Active fight against youth employment in Columbia

Children are our future. For a long time Siegwark has accepted a social responsibility with this in mind.

Corporate social responsibility has a long tradition with Siegwark. This year's focus is on Columbia. Youth unemployment in the South American country is 16 percent. As part of this year's lighthouse project Siegwark Columbia is involved as a partner in SOS Children's Villages YouthCan! initiative to enable young persons affected to have practical experience in a real work environment and thus to improve their future prospects in the long term. Local Siegwark employees personally stand for the vocational qualification of young people and act as role models, trainers and mentors. Additionally, the company is involved in the building of a virtual education center, to improve educational opportunities on site through access to digital tools and software.

In addition to numerous local activities, the company has run various aid projects with SOS Children's Villages since 2010 all over the world.

Since 2018 Siegwark has been involved in the global YouthCan! employment initiative of the organization.



An overview of all lighthouse projects is available [here](#).

More about YouthCan! employment initiative of SOS Children's Villages



“Our goal is to support young people in living independently in a self-determined manner.” **Herbert Forker, CEO Siegwark**