



Statement on Ethics/Social Responsibility, Sustainability, Product Safety and Circular Economy

Ethics and Social Responsibility

Siegwerk and its employees operate on the basis of a “Code of Business Conduct”. On the basis of this code both Siegwerk and its employees represent the values of a family-owned business, which is open-minded, future oriented and professionally managed. More precisely, this includes genuine responsibility as regards society and the environment, our customers, employees, suppliers as well as our shareholders. The implementation of this responsibility involves a sensible use of resources, a respectful behaviour amongst employees as well as the awareness of the consequences that arise from our activities. Compliance with this Code of Business Conduct means that Siegwerk employees observe applicable law and regulatory framework at all times and in any circumstance. Besides, they are advised to comply with the utmost ethical and moral standards as well as honesty in exercising their everyday activities.

Health and environmental protection aspects are equally important as economic interests. Protection of the environment and eliminating environmental impacts as much as possible as well as the environmental compatibility of our products are basic principles of our activities. Siegwerk is committed to an open discussion with customers and end users, the public and other important stakeholders along the value chain.

Siegwerk, being one of the biggest ink producers worldwide, is a multicultural employer. Our corporate goals can only be achieved through equal treatment at the workplace as well as through diversity of employees.

Siegwerk is committed to fair and respectful working conditions. No person is to be discriminated or unfairly treated, disadvantaged, favoured or harassed because of race or ethnicity, color, nationality, religion, ideology, gender, age, sexual orientation or physical characteristics or other protected classes in the particular country. Furthermore, Siegwerk expressly condemns and will not participate in or condone the use of child or forced labor.

In 2012, Siegwerk has joined **Sedex** (Supplier Ethical data Exchange), a not for profit membership organization dedicated to driving improvements in global supply chains. Hence Siegwerk has committed itself as the first printing ink manufacturer worldwide at that time to continuously improve ethical performance along the supply chain. Please find more information on www.sedexglobal.com.

Sustainability and Circular Economy aspects of printed products

The production and supply of raw materials for printing inks as well as the production and supply of printing inks for printed matter is part of the entire manufacturing process of either the graphic chain or the packaging chain. Material and energy consumption for ink raw materials, during ink manufacturing and distribution and the related GHG emissions (greenhouse gas emissions, mostly carbon dioxide) have to be assessed in



proportion to the respective contributions of the final printed product resp. the packed product as sold to the consumer. It should be noted that the share of printing ink accounts for typically up to a maximum of 2-4% of the final printed product. These figures are confirmed by acknowledged organizations like CEPE/EuPIA, representing the European Printing Ink Manufacturers. However, Siegwerk does not limit its understanding of sustainability to its own products but is well aware of the enabling effects printing inks have in creating a sustainable packaging industry that reduces, reuses and recycles materials and products, with the clear intention to contribute to a Circular Economy.

I. Printing inks and environmental and product safety aspects

Siegwerk has established strict standards for its raw material suppliers and is regularly auditing these on a global scale, based on a priority and relevance scheme. Thus, it is safeguarded that raw materials for our printing inks are produced in compliance with pertinent legislation of the country of origin resp. according to standards set by Siegwerk, which are in line with the UN Global Compact requirements. UN Global Compact requirements are addressing environmental, social and governance aspects. Similar care is taken for the production and supply of printing inks. All of Siegwerk’s major production facilities (Centers of Excellence) around the world are either/or ISO 9001, 14001, 18001 and 50001 certified.

Globally, Siegwerk inks and varnishes for all applications are complying with the exclusion criteria as set by EuPIA¹ and are continuously adapted to these in case of new toxicological and chemical regulation data is made available by suppliers or is issued by legislators. Likewise, SVHC (**S**ubstances of **V**ery **H**igh **C**oncern as stipulated by the European Chemicals Agency) are banned from use in Siegwerk inks and varnishes on a global scale. For the extremely sensitive applications in the NPH segment (Nutrition, Pharma, Hygiene) Siegwerk’s inks and varnishes are optimized towards the highest consumer safety standards as regards their toxicological profile. This includes not only the raw materials intentionally used in the inks and varnishes in order to create a technical effect, so-called “IAS” (Intentionally Added Substances) but also the impurities present in raw materials, so-called “NIAS” (Non-Intentionally Added Substances). For NPH applications utmost transparency towards our customers is practiced by Siegwerk in so far, that we communicate on potential migrants (substances, which potentially could be transferred to the packed content) via the so-called “Statements of Composition” (SoC). That enables the customers to take appropriate measures in order to prevent from any negative impact for consumers.

II. Renewable raw materials

Compared to chemical products in general, which are largely manufactured based on petrochemical sources, printing inks have always been based on a considerable amount of renewable raw materials. Rosin as well as by-products of (paper) pulp production are the main starting materials for resins used for publication gravure inks for magazine printing; cellulose is the starting material for nitrocellulose used as one of the main binders in solvent-based packaging inks. These inks are furthermore typically based on a variety of renewable raw material sources, ranging from biosource-derived solvents, like bioethanol, cellulose based biopolymer CAB/CAP (cellulose acetate butyrate/cellulose acetate propionate), fatty acid esters and the like.

¹ EuPIA Exclusion Policy for printing inks and related products, www.eupia.org



Also, important to be mentioned would be the new generation of water-based packaging inks which contain a very high share of biopolymers and the so-called sheetfed inks for both publication and packaging purposes which are based on naturally occurring vegetable oils resp. chemical modifications of these. All of these renewable raw materials contribute considerably to the minimization of the carbon footprint of state-of-the-art printing inks.

Contribution to a Circular Economy – reuse and recycling of printed packaging and print media

Whilst being established to a great deal in the paper chain, the idea of a Circular Economy is permeating the packaging industry. In essence this means that packaging has to move away from a take-make-use-dispose (linear) model to a circular model, which entails reducing material consumption, reusing products to increase utilization and recycle products to create new raw materials.

At Siegwerk we cluster our activities into two fields of action:

- 1. Design for less:** Here the main area of impact is designing for less plastic, e.g. by substituting with renewable materials such as paper. Paper/carton or cardboard packaging can be printed by a variety of inks (solvent-based, water-based, vegetable oil-based and UV-curing) as well as by printing varnishes with barrier functionality. Latter is important as it can provide functionality needed. Siegwerk also sees itself as enabler for re-use models. Today we are already providing inks for label solutions for returnable bottles. With the rise of re-use models, we are committed to working on enabling ink solutions.
- 2. Design for recycling:** In an ideal scenario no packaging is disposed (landfill or incineration) or at worst leaked into nature. All packaging should be recycled at the end of its use. This is the case for all packaging materials (plastic, paper, glass, aluminium). Siegwerk is providing solutions that increase the recyclability of materials. For plastic, examples include offering inks, varnishes and coatings for mono-plastics, replacing hard to recycle multi-plastic packaging. We also offer solutions that minimize the negative effects of inks in the recycling process: allowing the implementation of pertinent guidelines which restrict the grammage of ink, ban PVC/PVdC and impose restrictions for the use of carbon black (in case of 100% area coverage). Typically, all Siegwerk inks supplied for plastic packaging would be principally recyclable via mechanical recycling. Among other parts of the packaging, the ink contributes to creating greyish/brownish/greenish colored recyclates in the plastic recycling stream. Siegwerk is working on de-inking solutions to increase recyclate quality. Deinking of plastic packaging waste (i.e. wash-off via aqueous alkaline tenside solutions) would work for many Siegwerk ranges of inks and varnishes typically applied on plastic packaging. Next to recycling there is a niche for composting as an alternative circular end-of life scenario. Composting and as such compostable packaging, can be a good solution if some requirements are met. First, the packaged good should be organic waste that would be composted anyways (tea bags, fast-food container, coffee capsules). Second, an existing infrastructure of collecting compostable packaging for a managed waste stream or a well-managed home compost. For such applications Siegwerk is offering compostable ink series, whether solvent or water-based based on internationally recognised standards like EN 13432.



For other easily separable (from food residues) and sortable fractions of printed paper, carton or cardboard packaging there will be deinking options for high quality graphic paper grades (given the use of Siegwerk's range of solvent-based or vegetable oil-based inks). Packaging printed with water-based inks currently would be recycled into lower grade cartons.

With this focus on packaging we thrive for similar standards for inks for publication print. Here the only focus is on the recycling option. The established process to achieve circularity is the (flotation) deinking process. Siegwerk is making every effort that typical publication inks, like rotogravure inks, vegetable oil-based sheetfed inks or UV-curing sheetfed inks are compatible with this deinking process and allow the recycling of high-quality graphic paper. Whilst in the past UV inks had to be regarded as non-compatible with the deinking technology, Siegwerk has developed a LED UV curing ink system with excellent deinking capability.

For further information take also a look on the Ink Safety Portal on www.siegwerk.com/ink-safety-portal.

The information in this document reflects Siegwerk's policy and commitments. This statement is valid without signature.