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Siegwerk launches new deinkable UV flexo varnishes and offset inks to further improve the recyclability of paper and board packaging

With the development of new UV flexo varnishes and UV offset inks for commercial and packaging printing, Siegwerk expands its offering of deinkable solutions further improving the recyclability of UV-coated paper and board print products.



Siegwerk, one of the leading global providers of printing inks for packaging applications and labels, has developed a new UV offset ink series and UV flexo varnishes with outstanding deinking properties for commercial and packaging printing. The newly launched solutions increase the recyclability of UV-coated paper and board packaging and support the material-specific recycling targets according to the EU Waste Framework Directive (2008/98/EC) and the Packaging and Packaging Waste Directive (94/62/EC).

For the recycling of paper and fresh fiber board, it is important that ink and varnish films are fragmented into small hydrophobic (water repellent) particles during the recycling process in order to become detached and more easily separated from the substrate fiber. But present standard UV inks still often show an extremely poor deinkability as they form a solid, chemically, and mechanically resistant layer that is strongly attached to the cellulose fiber like an adhesive plastic layer. Therefore, they are difficult to remove during the recycling process resulting in big color spots in the recycled paper. Studies have also shown that prints coated with water-based dispersion varnishes and UV-curing flexo varnishes, similar to UV standard inks, very often produce problems during the paper and board deinking recycling process. During the recycling process, the printed varnish layers are fragmenting either into too small (water-based varnishes) or too big particles (UV varnishes) and cannot successfully be separated from the cellulose fibres. Packaging printing UV offset inks and conventional oil-based inks are often covered with standard UV flexo varnishes. In particular, this problem significantly hampers the recyclability of valuable virgin fiber-based carton board. This also applies to magazine covers printed in web offset with conventional oil-based heatset inks or UV flexo varnishes.

Based on Siegwerk's **SICURA Low NRGY UV/ LED UV** ink series, launched in 2019 as the first UV/LED offset ink system with impressive deinking properties for coated and uncoated types of paper, the gained knowledge has successfully been transferred to other new Siegwerk UV curable ink products. Siegwerk's experts have developed another UV offset ink series especially designed for offset and packaging printing of non-food solutions: **SICURA Plast SP**. The ink series has outstanding deinking properties when comparted to the deinkability of conventional oil-based sheetfed offset inks. **SICURA Plast SP** offers excellent offset properties and high color strength, as well as good adhesion on absorbent and non-absorbent substrates. It was especially developed to achieve a very high polyvalence use on board.

The deinkability of **SICURA Plast SP** alone, and in combination with the new deinkable UV flexo varnishes, has been proven by using the INGEDE method 11, the officially approved industry standard for deinking testing. Today, the full range of process, base and special colors of the new ink system is available and already in use at various Siegwerk customers. Moreover, Siegwerk's developers have also launched the first deinkable UV flexo varnishes.

"Our new UV flexo varnishes are recyclable by the standard flotation deinking process also used for the recycling of printed ink films on paper and virgin fiber board without any adaption. This enables us to offer commercial and packaging printers the complete package of recyclable UV offset inks plus varnishes. A very good example of Siegwerk's Circular Economy strategy, which enables our customers to become more sustainable – in this case by increasing the recyclability of paper," explains Thomas Glaser, Head of Technology Sheetfed at Siegwerk. The company's new deinkable UV flexo varnishes offer the same performance properties as standard UV flexo varnishes and can be applied in- and offline using standard flexo coating units.

With its deinkable solutions Siegwerk has improved the recyclability of UV-cured prints while supporting the EU's defined recycling target for paper and cardboard packaging. The stipulated recycling rate increased from 60 percent today up to 85 percent by 2030.

"Siegwerk works continuously on enhancing the deinkability of our inks and varnishes, contributing to the improved recyclability of packaging, further driving the development of innovative circular solutions in line with a Circular Economy approach," adds Thomas Glaser. Low-energy curing (iron-doped UV, LED-UV) is gaining increasing market share. As one of the leading global providers for packaging inks, Siegwerk is leading the development of eco-friendly inks: Assessing ways of enhancing the ecological footprint of its inks with no loss of performance is one of the company's key research and development efforts. Improved deinkability is one step to full recyclability of UV cured prints

strengthening the ecological benefits of the general UV printing process. Siegwerk continues to focus its research resources on finding enhanced solutions with increased deinking properties to improve the recyclability and enable the overall circularity of packaging.

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