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Siegwerk and Varcotec form partnership for Lock 3 antimicrobial coating innovation

As the new and preferred sales partner for Varcotec's innovative Lock 3 technology, Siegwerk is expanding its range of packaging inks and varnishes with a unique antimicrobial dispersion varnish suitable for a wide range of applications and packaging types.



Hanns Martin Kaiser, Vice President Paper & Board EMEA and Liquid Food Packaging at Siegwerk and Jens Frings, Managing Director of Varcotec, signing the contract.

Siegwerk, one of the leading suppliers of printing inks for packaging applications and labels, and Varcotec, a specialist for technically sophisticated overprint varnishes made for the printing industry, have entered into a distribution partnership for Varcotec's *Lock 3* antimicrobial coating technology in the EMEA region (Europe, Middle East and Africa). This innovative dispersion varnish is the

first of its kind, and was developed in cooperation with a spin-off company affiliated with the University of Regensburg, Germany. The antimicrobial effectiveness of this product has already been confirmed by several independent testing institutions.

“With the integration of Varcotec's innovative product technology, we are adding a unique solution for various applications and packaging industries to our portfolio, thereby once again reinforcing the holistic nature of our offers for the packaging market,” said Hanns Martin Kaiser, Vice President Paper & Board EMEA and Liquid Food Packaging at Siegwerk. Even if printed surfaces on packaging generally do not constitute a hazard, consumers continue to be exposed to potentially contaminated surfaces. As different germs (e.g. viruses, bacteria, fungi) exhibit varying survival times, the *Lock 3* technology makes a valuable contribution to avoid risks of transmitting bacterial and viral infections when products’ printed surfaces (outer packaging, partitions, exercise books, etc.) are handled by multiple people in short time. *Lock 3* antimicrobial solutions help to provide extra security in a multitude of applications by interrupting chains of infection early on.

“With *Lock 3*, Varcotec has launched the first antimicrobial dispersion varnish based on the principle of photodynamics in order to reliably reduce the germ loads,” added Paul Pain, Global Head of Water-based Technology at Siegwerk. “We are pleased to be able to include this unique product innovation in our portfolio, allowing us to offer this to our customers as partner of Varcotec." According to scientific data, germs can survive on surfaces from a few hours up to several months. “Until now, it has not been possible to apply a reliable coating onto absorbent substances, such as paper and cardboard, which would continuously and permanently destroy those germs,” explains Joachim Frings, from Sales and Development at Varcotec. “With *Lock 3* we have succeeded in developing a varnish system which can demonstrably reduce the germ load on a wide range of printed products, already at ambient lighting conditions.”

The water-based overprint varnish *Lock 3* allows for permanent, independent disinfection of the printed surfaces under ambient room lighting or in open daylight. *Lock 3* contains a specially patented substance, taking advantage of the principle of photodynamics: the photocatalyst is activated by visible light and transfers the energy thus absorbing the surrounding oxygen. This process creates so-called singlet oxygen, efficiently killing germs by oxidizing their shells.

For more than 20 years, singlet oxygen has been used routinely in medicine for the treatment of tumors and degenerative diseases. Antimicrobial use of singlet oxygen was confirmed during this time period. No resistance develops against singlet oxygen, in contrast to what is usually observed with antibiotics and conventional biocides. The active oxygen is gaseous: It can easily reach and kill microorganisms on dry and damp surfaces. With a range of about 1 mm it reaches far enough to destroy surface microorganisms, but remains constrained from arbitrary release into the environment.

The effectiveness of this varnish was already validated by several independent testing institutions. Tests have shown that *Lock 3* varnishes can kill both bacteria (according to ISO 22196 (mod.) for paper and cardboard) and infectious viral particulates (based on ISO 21702 (mod.)) by more than 99%. Additional tests against other virus strains, including three members of the Coronavirus family, are currently in the testing phase.

Lock 3 can already be applied to paper and cardboard by means of all commonly used printing machinery and coating equipment. The first pilot applications on plastic films are already underway, an expansion of the application range is under development and subjected to the required testing. This varnish is currently the only fully effective antimicrobial technology on the market which functions independent of moisture and temperature conditions and remains effective on dry surfaces. The photodynamic effect is temporarily suspended in darkness, but reactivated immediately upon renewed exposure to light. This varnish remains

effective for up to three years. In contrast, other comparable technologies, such as coatings containing silver and copper, require the presence of moisture or even UV radiation to obtain a sufficient effectiveness for disinfection. *Lock 3* dispersion varnishes are free from heavy metals, odorless and without impact on the recycling process of respective products or packaging.

“We are very pleased to have gained a leading player in the printing ink and packaging industry such as Siegwerk as our partner, able to integrate our unique and innovative coating technology into a significantly larger and international sales structure, in order to increase the product’s market exposure,” added Jens Frings, Managing Director of Varcotec. Within the framework of this partnership, Siegwerk will commence marketing Varcotec's *Lock 3* products in the EMEA region starting in June 2020. These products will first be available in Germany, then gradually launched in Central Europe with all countries in EMEA serviced by end of this year. The production of these varnish coating systems is still the responsibility of Varcotec. In the beginning, the product portfolio will only consist of water-based solutions. At the same time, the partners remain open to advancement of joint development activities in other areas of application, coating technologies and market regions at a later date.

About Varcotec

Varcotec GmbH is a specialist in the development and manufacture of ecologically high-quality and economically efficient system solutions for the printing industry. The company's future-oriented product range includes innovative and technologically sophisticated varnish coatings of the dispersion, oil pressure, HUV, LE, LED, and conventional UV type, tailor-made for the individual needs of each of its customers. Varcotec believes the use of energy-saving and emissions-reducing materials in the printing process must be a priority in research and product development at the company. When developing new products, the company also works closely with independent testing institutions,

thereby enabling achievement of the highest quality standards. Further information on Varcotec can be found at varcotec.online

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