

Room Temperature-Sealing Film

Corona Replaces Lamination

In search of a faster method of adhesion lamination and a better solution to thermal lamination, Polifilm has developed a new technology that utilizes a corona station in the production of stand-up pouches in one example. The films are connected chemically-mechanically without either heat or glue.

Polifilm's corona-activatable film is intended to open up new processing fields for laminators, online printers, as well as label producers. This method makes it possible to create composites without thermal lamination or adhesive connection, thereby simplifying the process considerably.

The idea to use corona activation for pouches has developed into a broadly applicable technology. To begin with, the property profile of the co-extruded polyolefin solution opens up wide ranges of application, from a sealing medium for multi-complex composites to an overlamine for labels.

The advantages as well as the processing of film solutions as sealing film are exemplified by the production of stand-up pouches. Instead of joining the sealing and print films at up to 125 °C heat or with a polyurethane-base curing adhesive, the voltage of in-line corona treatment suffices to activate the chemical-mechanical connection of low-temperature-reacting

plastics to the required adhesiveness. Film production by co-extrusion can avoid any sticking to the roll and counteract any interlocking such as in thermo-lamination. This also helps reduce the noise level during production.

Processing at Room Temperature Saves Energy and Money

Any film that seals at room temperature gives its user both economic and ecological advantages. The acquisition costs per system are generally about 80 % lower, over against classic energy and investment intensive thermal lamination. Example: the acquisition of a thermal lamination system can run about EUR 350,000, whereas a corona station can be installed for a mere EUR 30,000. Moreover, its running costs, as well as the CO₂ emissions from the eliminated heating process, are lower, since this film solution allows processing at room temperature. The usual 3 bar roller pressure for joining the laminating and printing film is sufficient to achieve a stable seal that can be cut and pouched in just five minutes subsequent to the corona treatment.

The added value for digital and online printing lies in the rapid processing, since the curing time for adhesive coating previously had to be figured in. In the growing online market, which is characterized by speed and small quantities per order, eliminating the two-to-three day curing time for two-component adhesives offers a decisive advantage. This is augmented on the quality side by reduced susceptibility to coating errors, by the elimination of the parameters exact adhesive application weight and correct viscosity range, as well by simplified process training for the personnel.

All in all, the room temperature-sealing film with its advantages of lower plant investment as well as simplified know-how requirement offers a good entry opportunity for digital printers who want to switch to flexible packaging, as well as for printers who wish to position themselves more broadly by integrating the laminating and printing processes. Laminators can also profit from this solution if they plan to expand internationally, especially to countries with limited access to know-how or



Sample pouch manufactured from an MDO/PE mono-material composite and labeled by digital printing. © Polifilm



Labels with overlaminate to protect Inkjet UV inks. © Polifilm

faced by personnel bottlenecks due to the shortage of skilled workers. This solution quickly compensates for the purchase price of the films which is slightly higher than that of conventional solutions.

The Process Can also Be Used as an Overlaminate for Straight Printing and Labels

Whereas polyethylene varieties that are 25 to 160 µm thick are used for heat sealing films, polypropylene types of room temperature-sealing film can be used as overlaminate for straight printing. Since polypropylene is more temperature stable, the film protects the printed image from changes at the contact points of the sealing jaws when applied as the outer layer. Label production also profits from the use of an overlaminate, be-

cause this alternative protection helps save on material. In particular, the printed images of label solutions used for packaging and subject to the cold chain can be damaged by moisture. The new film solution stabilizes the processing window by replacing the UV-dried glue usually applied and/or an additional self-adhesive label.

The Future Is Mono-Material

Where the stated examples use multi-material composite layers, Polifilm is currently working on both All-PE and All-PP solutions for flexible mono-material packaging. At the moment, the sufficient temperature delta in the pouch machine presents the challenge. The aim is to exploit the potential of room temperature-sealing film for all groups of users. ■

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