SIEGWERK
LABEL explicit
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Sleeves

Demanding sleeves technology

The all-round labelling of containers by means of sleeves is now a fully-fledged process. A plastic web is printed from the roll and folded lengthways off-line with the printed side inwards and bonded to form a tube using THF. On the shrinking unit, the tubular web is cut into sections just before sheathing, enabling a tubular label to be drawn down over each container. The containers then pass through a hot-shrink tunnel, in which the tubular label adopts the shape of the container. The most frequently encountered shrink processes employ hot air tunnels or steam tunnels. Depending on the container shape, shrinkage rates of up to 70% may occur at some points.

The shrink films

The most commonly used shrink materials are PVC, PET and OPS. These plastic films shrink at temperatures between 100 °C and 150 °C.

Shrink films are produced in such a way that they shrink almost exclusively in one direction. The shrinkage calculation is based on the circumference of the tube before shrinking. If the circumference is reduced from 100 to 60, this corresponds to a shrinkage rate of 40 %. If the tube around the container is reduced to 30 % of the original size, this equates to a shrinkage of 70 %.

The substrates

Because of the migration risk with UV inks, containers are divided up into substrates with or without a barrier function. Thick-walled PET containers may be ranked alongside glass containers and the risk of migration excluded. In the case of containers made of PP, PE, PS or thin PET, low migration ink systems must be employed as the sleeved containers are generally used for foods. Statutory regulations and product safety for foodstuff packaging demand that no ink components are able to find their way into the food, either as a result of penetration of the substrate or through set-off. Responsibility for compliance with the regulations rests with the printer/packer or the distributor/retailer.

Suitable ink systems

The printing inks must satisfy the strictest requirements, irrespective of whether the sleeves tube is printed with UV inks or solvent-based inks.

- Above all, the inks must be sufficiently flexible so as not to become brittle after shrinking.
- In addition, the inks must be scratch-resistant so as to withstand the sheathing without damage.
- Depending on the application and the machine, the inks should have a slip coefficient of 0.1 to 0.3.
- Moreover, the inks must be heat-resistant and adhere well to non-absorbent substrates.

More and more sleeves are being made using UV flexographic print. In addition to radical curing inks, it would also in principle be possible to use cationic ink systems which have the advantage of being able to withstand greater shrinkage rates. Cationic ink systems are, however, hardly ever used anymore because they are more expensive and more difficult to print. The most commonly used radical inks cure quickly and permit higher printing speeds. In optimised systems, shrinkage rates of up to 60% are the norm.

Tried and tested ink series

The best results in the food sector are achieved with UV flexographic series **Sicura 39-10 LM** or **Sicura PLAST LM** in UV offset print. Where migration risk and set-off are irrelevant due to the presence of a functional barrier or if the container is not to be used for food, the series Sicura FLEX 39-8 or Sicura PLAST SP may be used.

The white is important

A vital role is played by the all-over white coating, generally applied to the inside of the tube as the final ink during the reverse-side printing. The white must possess good slip properties and high scratch resistance in order to withstand damage when sheathing the sleeves. Moreover, the formulation of the white is critical for the flexibility of the ink system as a whole. It calls for a white that exhibits minimal shrinkage during curing, yet retains the maximum possible flexibility; albeit not at the expense of excessively slow drying or a surface which is too soft and thus prone to scratching.

Two outstanding product families with good covering power for sleeves:

White for low migration applications: White F RAD LM SLEEVE.

White for applications where no migration criteria are involved: White F RAD SLEEVE.