



UV inks and varnishes for food packaging

According to the German Food and Consumer Goods Act (LMBG) and EU Regulation 1935/2004/EU, it is forbidden to market foodstuffs in a manner by which substances that are hazardous to health or alter the organoleptic characteristics of the foodstuffs are transferred to them.

Organoleptic characteristics

In the majority of cases, UV curing (drying) leads to the emission of odour-creating substances that have an extremely negative effect on the organoleptic characteristics of the inks and therefore of the print. These substances are decomposition products of photoinitiators and vehicles, and residual monomers also, that have not fully cured.

Standard UV inks have high Robinson values. The organoleptic characteristics, however, also depend on the drying properties of the inks and varnishes.

Furthermore, many substrates exhibit a distinct increase in odour after passing through the UV curing unit. This increase in odour on the part of the substrates can very frequently be even greater than the odour emissions of the UV inks and varnishes.

Transfer of substances to foodstuffs

A second problem is that of migration of ink constituents to the foodstuff. This problem is particularly important with respect to primary packaging. Substances can be transferred in the following ways:

By migration through the board

In the case of board, substances can migrate through the board from the printed side to the side facing the foodstuff and therefore into the foodstuff.

By invisible setoff

Due to contact between the unprinted reverse side and the printed side when on the reel or in the stack, it is not possible to rule out the transfer of substances from the printed front side to the unprinted reverse side.

Among other things, UV inks and varnishes consist of

- monomers
- oligomers
- photoinitiators.

The majority of these raw materials have not been evaluated toxicologically. For this reason, limit values that are in the region of the respective minimum limits that can be detected by analytical means will apply in future to the transfer of substances to foodstuffs.

UV inks dry in the press by means of a chemical reaction. With the UV curing process, there is a certain residual potential for migration due to:

- decomposition products of photoinitiators and/or non-reacted photoinitiators
- residual monomers that remain in the ink film or are absorbed into the substrate
- incomplete reaction by the ink components due to inadequate curing.

The degree to which the products cure depends on a variety of influencing factors:

- the type and energy output of the UV emitters
- the press speed
- the time intervals between printing and drying
- the substrate (its absorbency)
- the composition of the ink.

The **hubergroup** is more than willing to assist customers in the use of UV inks and varnishes for food packaging. Prerequisite for this, however, is that customers agree to the hubergroup providing them beforehand with detailed advice and instruction into the risks and problems of printing with UV inks.

Contact addresses for advice and further information: www.hubergroup.de

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