



# Brief guide on food packaging

## 1. Migration: general information, causes and minimisation

The term migration, when used in connection with packaging for human or animal food-stuffs, means the transfer of substances from the packaging material to the packaged goods. This may cause impermissible changes in the foodstuff and should therefore be avoided.

Migrating substances may be found in all layers of the packaging material. That is why steps to reduce the risk of migration should be taken even as the packaging is designed and the raw materials selected. A few examples from the past few years illustrate why choosing the right raw materials is so critical:

- Mineral oil in recycled cardboard
- Softeners in PET or PE films
- Photoinitiators in UV inks

This obligation of diligence applies not only to the packaging manufacturer, but to the entire supply chain. Coatings by Schmid Rhyner AG that are intended for use on food packaging contain only specially selected raw materials that minimise the risk of migration.

Migrating components of printing inks and coatings can contaminate the packaged goods in two ways:

- Substances may diffuse from the outside through the printed substrate to the inside of the packaging, and from there to the contents.
- During the printing process, substances may be transferred from the outside of one packing unit to the inside of the next unit in the pile; and from there eventually to the packaged goods (this is known as 'set-off' migration).

Packaging that does not include an extra inner packaging ('primary packaging') which acts as a barrier to protect the packaged goods from migrating substances is itself to be regarded as

primary packaging. Materials such as aluminium and glass have such a barrier effect. Foil manufacturers will provide information on the barrier effect of special foils. These materials may also be prone to set-off migration.

If the barrier effect of the inner packaging cannot be guaranteed, the outer packaging layers are subject to the same legal regulations that apply to objects coming into contact with food.

Schmid Rhyner recommends having packaging tested for harmlessness to foodstuffs by an accredited test laboratory to ensure food safety before putting the packaging on the market.

## 2. Water-based coatings on food packaging

If the object is to find simple and inexpensive surface protection for the finishing stage of print products, water-based coatings are the means of choice. These coatings are based on polymer resins usually not prone to migration. The manufacturer of the resins is obligated to use only raw materials that comply with the relevant regulations.

Schmid Rhyner offers special products for quality surface finishing with water-based coatings, such as water- and grease-resistant coatings or Soft-Touch coatings that are also suitable for food packaging.

However, water-based coatings may contain additives or auxiliary products and side products that may have to be considered in the packaging test.

## 3. UV coatings on food packaging

Schmid Rhyner offers a comprehensive range of UV coatings for top-of-the-line surface finishing of food packaging. See our brochure WESSCO® LM / WESSCO® EPPI® LM for a description of the many possibilities and benefits offered by UV coatings.

Unlike water-based coatings, UV coatings cure into a hard film when exposed to UV light. Schmid Rhyner adheres to special standards in selecting raw materials for these coatings. The aim is to reduce both the risk of migration and the odour of the final packaging as far as technically possible, or even to eliminate them altogether.

Schmid Rhyner's own photoinitiator – EPPI® – was developed for special requirements and highly sensitive packaging. EPPI® embeds itself physically in the coating film during curing.

## 4. Processing coatings for food packaging

The following points should be observed in the processing of coatings in order to ensure food packaging safety.

- Use suitable inks and/or overprint coatings that are recommended for this application. Schmid Rhyner offers both water-based coatings and special Low Migration (LM) UV coatings (the 2000 series) that are suitable for food packaging.
- Make sure that inks and coatings are cured completely. Curing may be impaired by
  - insufficient dryer or UV lamp output (high processing speed)
  - old UV lamps
  - dirty UV lamps and reflectors

Our brochure KEY POINTS describes additional critical aspects in relation to print finishing.





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But it is not just inks and coatings that must be tested for food safety, other materials used in the printing and finishing process may also have undesired side-effects. When effects selecting a recycled printing substrate, for instance, remember that all substances that were applied to the paper or board during its life will also be found in the recycled material. Also, absorbent substrates will soak up liquid, UV-curing materials, which are not cured completely because they are in the radiation shadow of the UV lamps. There are also differences with regard to the packaged goods. Non-perishable or fatty products are reputed to be especially sensitive to migration.



## 5. Legal requirements for food packaging

The legal requirements for food packaging in the EU are described in Regulation (EC) No 1935/2004. One of the most widely known articles reads as follows:

### Article 3

#### General requirements

(1) Materials and articles, including active and intelligent materials and articles, shall be manufactured in compliance with good manufacturing practice so that, under normal and foreseeable conditions of use, they do not transfer their constituents to food in quantities which could:

- a) endanger human health;
- or
- b) bring about an unacceptable change in the composition of the food;
- or
- c) bring about a deterioration in the organoleptic characteristics thereof.

Annex 1 of the regulation lists printing inks among the materials and articles that may be subject to specific measures. However, such measures have not yet been implemented.

- The most important specific measure within the meaning of (EC) No 1935/2004 is currently EU 10/2011, which deals with plastic materials and articles intended for contact with food. Printing inks are not mentioned specifically in this regulation. However, if they contain substances listed there, the applicable restrictions must be observed.
- The Swiss Regulation 817.023.21 describes in section 8b: Packaging inks how printing inks and coatings on materials intended for contact with food are to be used, on the condition that the foodstuff does not come into contact with the printed side of the packaging. Only the substances listed in Annex 1 Lists I and II and in Annex 6 may be used in the production of printing inks and their raw materials (in compliance with the requirements described).
- GMP (EC) 2026/2006 describes the rules of good manufacturing practice in the production of articles intended to come into contact with food. This regulation includes a reference to printing inks.
- Applicable national regulations must also be observed. Germany, for instance, is currently drafting a regulation on printing inks.

This list is not complete. You will find a good overview on the website of the European Printing Ink Association ([www.eupia.org](http://www.eupia.org)) under 'Printing Inks for Food Packaging'.



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