

Where are we today?

The subject of analysis of chemical migration from food packaging comes back again and again through the high level of publicity given to the subject after some components of ink were found in food. To safeguard their products, many food manufacturers have set their own guidelines. An example of this is the Nestle Guidance Note on Packaging Inks. Also, the Legislators of several countries, especially Switzerland – have been active, and imposed restrictions on materials to be permitted in inks and coatings. These heightened restrictions and laws have consequences for the entire food supply chain, for example :

1. The food manufacturer shall be liable for the safety of his product, and can be prosecuted under the law for any breach thereof:
2. The food packer is responsible for ensuring that no component from his pack enters the food to an unacceptable level – as defined in law.



Do you have anymore questions?

For more information, please contact at any time :

Argus Analysen Service GmbH

Hannoversche Straße 33

31319 Höver (Sehnde)

Germany

☎ +49(0) 511 | 5471 – 155

@ info@argus-analysen.de

🌐 www.argus-analysen.de



Migration in Focus

Testing Methods for migration analysis



Migration Analysis – NOW A 'MUST'

It is gradually becoming standard practice, that food manufacturers and packers will require migration analysis on packaging and labels. For this purpose, the appropriate print samples are, for example, exposed for 10 days at 40°C with 50% solution of ethanol, or in the case of dry foods, with a food simulant such as Tenax. The test conditions chosen will depend on the foodstuffs to be packed. The resulting samples are then analysed using the appropriate analytical methods and instruments..

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offers the most important analytical test methods and migration analysis. We use chromatography in conjunction with mass spectrometry. The chromatography achieves the separation of the mixture into its individual components. Then the mass spectrometry supplies the information concerning the quantity, or mass, of the migrated material. Similarly, the migrated materials are characterized and identified by a fingerprint of their fragmentation patterns.

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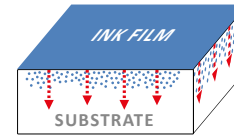
is a 100% subsidiary of Jaenecke & Schneeman Druckfarben GmbH - one of the leading manufacturers of low migration printing inks. Thanks to this connection, the complete Argus Analytical expertise is enhanced and combined with the necessary knowledge of the inks, coatings, and production methods.

What is migration?

Migration is the transfer of substances from the food packaging into the contents of the pack i.e. the food! There are 3 different types of migration :

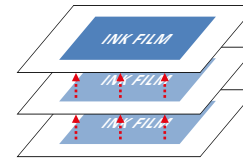
Penetration migration

Migration from the packaging into the food and vice-versa.



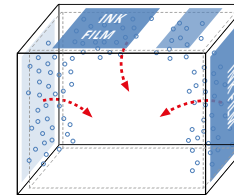
Set-off migration

Migration from the printed to the unprinted side of the packaging through pressure in the printed stack or reel.



Gas or vapour phase migration

Migration by evaporation of volatile substances when heated.



The successful production of fully compliant packaging is heavily influenced by various factors, such as the appropriate selection of inks and coatings, cleaning products, and other printing materials and aids and additives. Since migration not only comes from the primary packaging, we need also to analyse it in the secondary packaging. Thus, self-adhesive labels which form an integral part of the packaging, must also be included in the migration analysis.

What are the factors which influence migration outcome?

Migration mainly occurs with small and less complex molecules (<1000 da) – typical materials with low migration targets are :

Photoinitiators

- > Small molecules decay during the curing process
- > Not fully integrated into the ink film

Binders

- > Can be contaminated by acrylic acid or solvents
- > Monomers which have not been fully bound
- > Incomplete cure due to old lamps or dirty reflectors

Solvents

- > Residue from waste or cleaning solvents

Oil fatty acid esters

- > Residues from incomplete drying

Substrate components

- > Mineral oils from recycled paper, plasticizer from film, adhesive components from labels

Printing Machine

- > Contamination by residual lubricants
- > Inadequate cleaning when changing from non LM inks to LM inks