

**"To know the possibilities requires the expertise at all levels of the value chain".**

## TOPICS

*Sensory technology*

*DHS-Dynamic Head Space*

*How does migration happen?*

## Sensory technology (smell & taste)

Especially for the packaging of food, the senses of smell and taste are an important part of a safe and successful packaging solution for the food to be packed. The entire packaging solution (primary and secondary) must not cause any changes to the food or release of any undesirable substances into the food to be packaged. For this reason, mainly virgin fibre materials are used in primary packaging for food today.

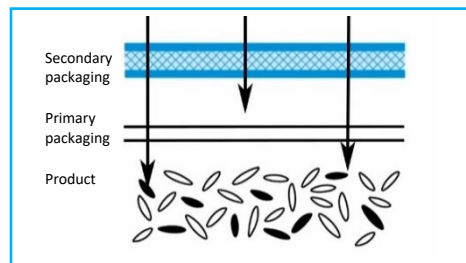


*Pictures: Our laboratory at the Smurfit Kappa France site is equipped with state-of-the-art machinery and carries out these complex measurements on samples.*

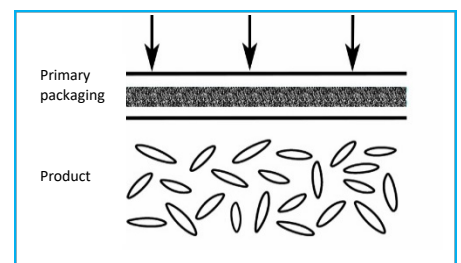
Currently, internal investigations are carried out using gas chromatography following a method known as DHS - Dynamic Head Space Analysis. This method is a new possibility to analyse the migration of substances from paper and board under conditions that replicate the shelf life of food packaging. The comparative tests using DHS analysis show interesting results for different types of board. The best results on Solid Board packaging are those using the Smurfit Kappa MB12 technology which gives very positive results.

## How does migration occur in food?

The mechanically or chemically prepared fibres for paper and board packaging will still contain substances such as lignins, fatty acids and other impurities. These may influence the sensory properties of smell and taste. The main cause for such negative influence on the senses is likely to come from additions such as printing inks, binders and varnishes which are applied to all types of packaging. Where plastic-coatings are applied, these can also have a negative influence on sensory perception.



*Figure: Migration can pass through the packaging material and negatively affect the smell and taste of the food.*



*Figure: MB12 used as filter material in the core of the recycled cardboard, adsorbs and blocks the migration of organic substances.*

# Remedy through MB12

## TOP results for Solid Board materials from Smurfit Kappa

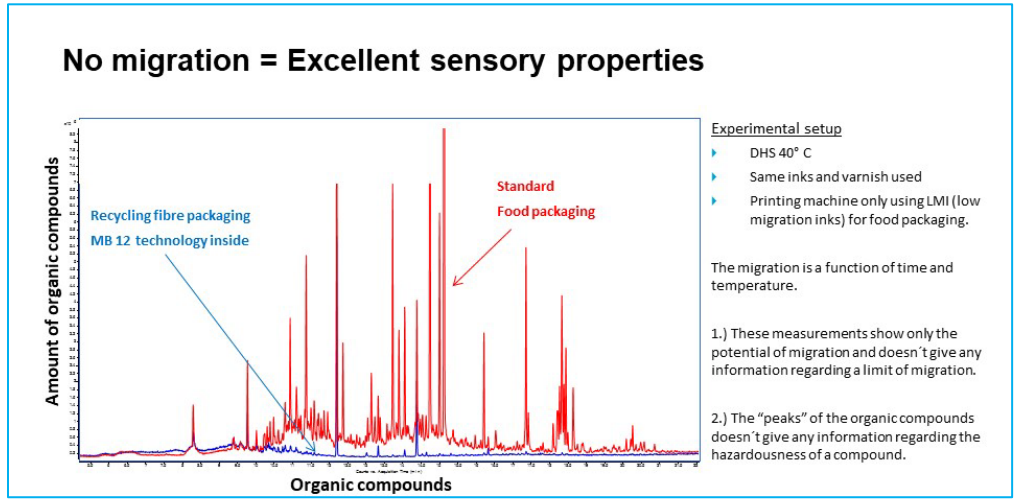
### How can remedial action be taken?

The use of specially selected packaging materials, printing inks and varnishes are important points in order to achieve the minimum sensory results for the food manufacturers and converters. This is not always possible, but Smurfit Kappa have an alternative recommendation using MB12 technology.

#### The Smurfit Kappa Solid Board recommendation:

The proven MB12 technology!

With MB12 used in Solid Board grades, undesirable substances will be adsorbed and thus prevented from migrating to the food to be packaged. The DHS (Dynamic Head Space) graph as illustrated below shows the distinct difference between organics coming from standard food packaging compared to the almost immeasurable quantities from the MB12 board grade.



With the MB12 technology, the evaluation results of the Robinson test, even with printed paper and cardboard samples, are generally found to be from 0 – 1.

### Measurement of the senses today:

The measurement of sensory perception is still normally based on subjective judgements of a test panel of specially selected people. This is often called the Robinson test, following EN1230-1 for smell and EN1230-2 for taste. The sensory properties of a packaging material are evaluated on a scale of 0-4:

- 0 no odour, no taste transfer - no perceptible odour (flavour)
- 1 Odour, taste transfer just perceptible - odour (flavour) just perceptible
- 2 moderate odour, moderate flavour transfer - moderate odour (flavour)
- 3 moderately strong odour, moderately strong odour transmission - moderately strong odour (flavour)
- 4 strong odour, strong odour transmission - strong odour (flavour)



If you would like expert advice from one of our colleagues,  
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