



Globally
relevant content

Dr. Monika Tönneßen | April 2015

Ways to improve food safety



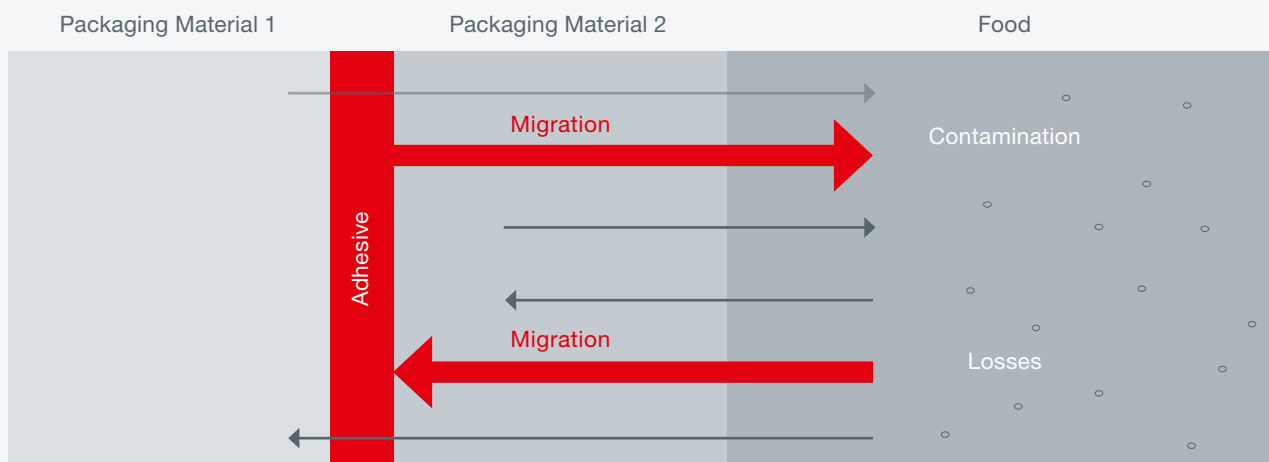
Excellence is our Passion

Minimize migration – the key to safe food packaging

Migration is the transfer of substances between two phases, that means from the packaging into the food and vice versa.

On the one hand a contamination of the food through substances from the packaging is possible. On the other hand losses from the food could happen through migration into the packaging.

Effects of migration could be quality loss of the packaged food, health hazard due to the transfer of dangerous substances from the packaging into the food up to inedibility of the packaged food, which might result in a withdrawal of the packaged foodstuff from the market.



Transport of small molecules within the packaging material itself and the transition into the foodstuff or vice versa.

How to influence migration?

- 1 The less the **amount of the adhesive applied** the less the migration risk for this component of the packaging.
- 2 The longer the **shelf-life** of the foodstuff the higher the risk of migration.
- 3 The amount of migratable substances is fundamental for the migration. All substances with a molecular weight below 1,000 Dalton have a high migration tendency. **The lower the amount of these small molecules the lower the risk for migration.**
- 4 For the choice of the packaging material it is important to know the type of food to be packaged. By considering the **polarity of the packaging material and the foodstuff** the migration risk can be reduced. The right choice of polar and non-polar layers in multi-layer food packagings is the key to reduce the migration tendency.
- 5 The migration rate strongly depends on the **temperature** the packaged food is stored at. The higher the temperature the faster the migration of substances.
- 6 The ratio between the packaging surface area and the quantity of packed foodstuff is important for the risk of migration. The smaller quantities are packed the worse is the ratio and the higher the risk for migration.

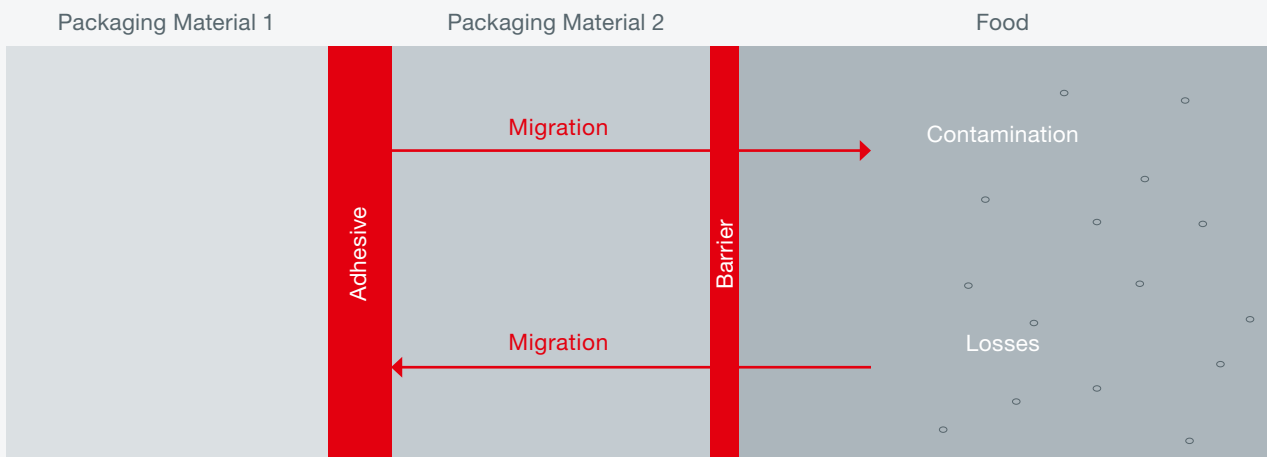
Improve food safety by using barriers in packaging materials

The use of barriers in packaging materials has various benefits. They can delay or even avoid migration, avoid the contamination of the packaged food and avoid food losses.

Examples of barriers

- Absolute barriers: glass and metals
- Partial functional barriers: paper and plastics

Finally, barriers maintain the quality of the packaged food and avoid health hazard due to the packaging.



Incorporating a barrier reduces the migration risk significantly.

Legal requirements for all food contact materials

No transfer of substances from the food contact material into the foodstuff in quantities, which could

- endanger human health
- bring about an unacceptable change in the composition of the food
- bring about a deterioration in the organoleptic characteristics thereof

Global legislation



European Union: (EC) No. 1935/2004
China: GB9685
US: 21 CFR 174.5
Mercosur: GMC/Res No 3/92



Dr. Monika Tönnießen is a chemist by profession and works in the Product Safety Department of the Henkel Adhesive Technologies division. Since more than 9 years she deals with customer inquiries and is an expert on all food contact related questions. She is member of the paper & packaging group of the European Adhesive Association FEICA.

Key take away

- The most efficient way to improve food safety is to minimize migration, e. g. by optimizing the amount of the applied adhesive or incorporate a suitable barrier in the packaging material.
- By developing more efficient adhesive solutions based on low-migrating substances, Henkel contributes to ensure safe food packaging materials.

Literature references and useful links

Food Safe Packaging Premium Area offering webinars, whitepapers, FAQs and videos

- <http://www.henkel-premium-area.com>

European Legislation offered in 24 languages

- <http://eur-lex.europa.eu/>

Chinese Regulations on food and food-related products

- http://www.cirs-reach.com/food/Food_Law_in_China.html

U.S. Government Publishing Office: Federal Regulations

- <http://www.gpo.gov/fdsys/granule/CFR-2011-title21-vol3/CFR-2011-title21-vol3-sec174-5>

Resolutions of the Mercosur Common Market Group

- http://www.mercosur.int/t_generic.jsp?contentid=527&site=1&channel=secretaria

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