

Analysis of MOH (Mineral Oil Hydrocarbons) for MOSH and MOAH in Food and Packaging Materials



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Mineral oils are comprised of various hydrocarbons. If these are aliphatic, i.e. come in the form of saturated linear and cyclic (non-aromatic) hydrocarbons with mostly 16 - 25 carbon atoms, these are referred to as "**Mineral Oil Saturated Hydrocarbons**" (MOSH). Aromatic, i.e. unsaturated hydrocarbons consist of mostly alkylated polycyclic compounds (usually with 1 - 4 aromatic rings) and are referred to as "**Mineral Oil Aromatic Hydrocarbons**" (MOAH).

On January 16, 2017, the European Commission (EC) adopted Recommendation (EU) 2017/84 on the monitoring of mineral oil hydrocarbons in food and in materials and articles intended to come into contact with food. On March 15, 2017, the German Federal Ministry of Food and Agriculture (BMEL) announced a new draft version of the 22nd ordinance amending the Consumer Goods Ordinance ("Mineral Oil Ordinance").

In the beginning of March, the ordinance was sent for written consultations to the federal states of Germany and to industry associations.

The ordinance provides a specific migration limit (SML) of 0.5 mg/kg food for mineral oil aromatic hydrocarbons (MOAH) and recommends the introduction of functional barriers to reduce the migration of chemicals from recycled paper and board used in contact with food. However, in comparison to previous versions of this draft ordinance, the SML for mineral oil saturated hydrocarbons (MOSH) of 2 mg/kg food was removed in the most recent draft.

During the past years, scientific publications and testing campaigns have regularly shown that MOSH and MOAH levels in food frequently exceeded 2 and 0.5 mg/kg food, respectively.

As migration from food contact materials such as paper and board packaging is suspected to contribute significantly to the total exposure, monitoring should include pre-packaged food, the packaging material and the presence of functional barriers, and equipment used for storage and processing. Certain parameters may increase the migration of MOH from packaging into food, such as storage time and storage conditions.

How does mineral oil get into food packaging?

Mineral oil saturated hydrocarbons are predominately used as solvents. They are contained in heating oils, lubricants and motor fuels, but also in many printing inks as used for newspapers, for example. When producing cardboard boxes from recycled recovered paper, mineral oil saturated hydrocarbons get into the food packaging. It is currently not possible to eliminate a sufficient quantity of these substances during the recycling process. Mineral oils may also be found in inks and colors used for printing food packaging. Contamination from packed raw materials (e.g. printed jute bags) cannot be ruled out either. With mainly dry food with a large surface area being packed in cardboard boxes, the volatile mineral oils find their way into the food by gas phase diffusion.





- Finished products (as being sold)
- Final product without packaging (to ensure that MOSH & MOAH do not get into the product through the processing)
- Packaging Materials (including card board boxes, barrier films and primary packaging films)
- Printing Inks

We also carry out Specific Migration test for the packaging materials using the various simulants. The SML of MOAH as per German Mineral Oil Ordinance of March 2017 is 0.5 mg/kg of food

As the dry products are stored over a long period of time, because of its longer shelf life, the chances of migration from the packaging materials become very high. The rate of migration is proportional to time and temperature. These simulated studies may also be carried out at TUV India Pvt. Ltd.



For further information please get in touch with us

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