

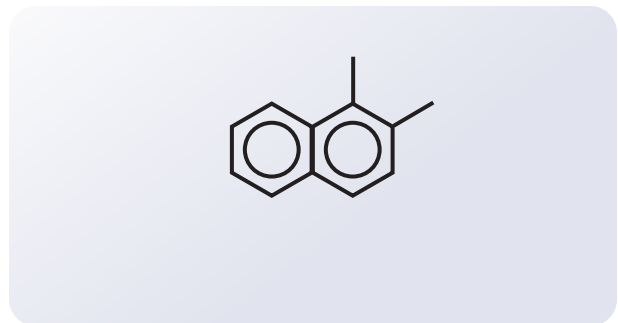
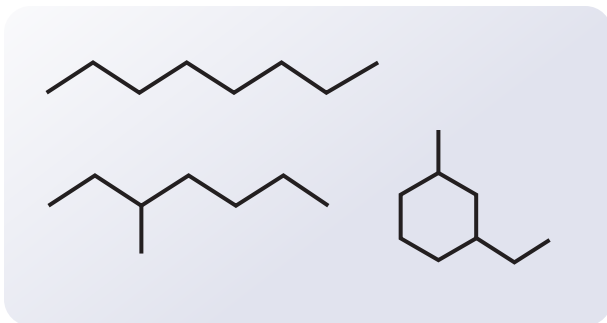
Food Packaging Film

MINERAL OILS

What are Mineral oil hydrocarbons

MOSH:
Mineral oil saturated hydrocarbons

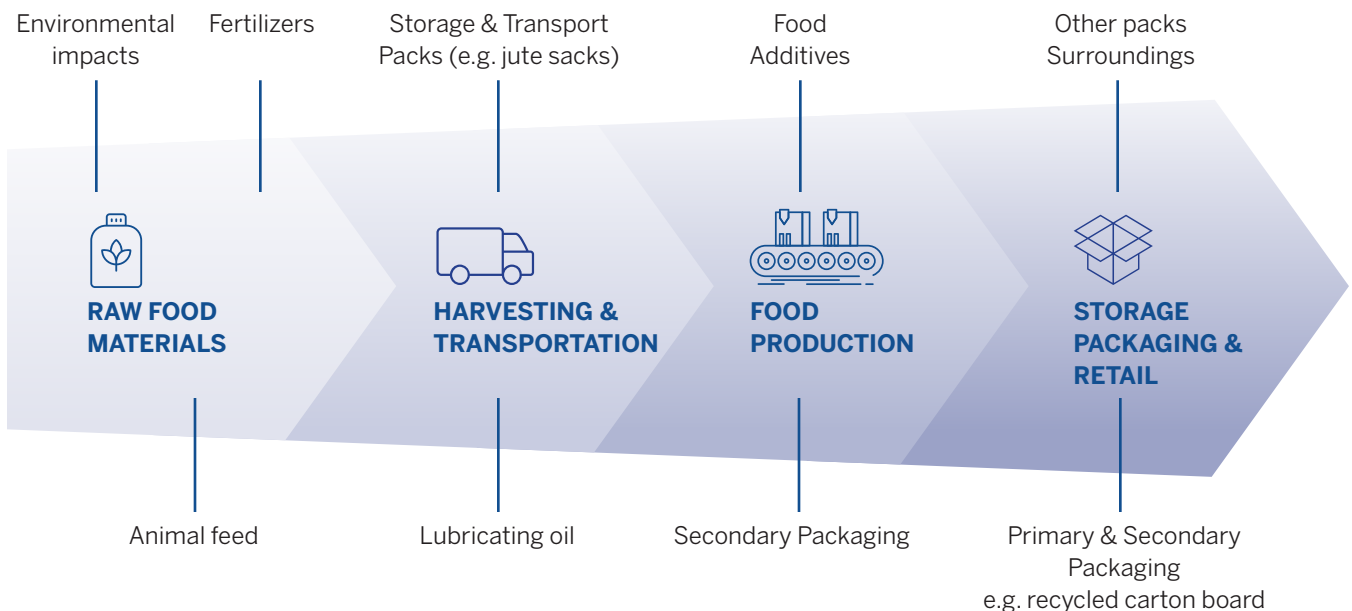
MOAH:
Mineral oil aromatic hydrocarbons



Why mineral oils can be a problem?

- MOAH are suspected mutagens and carcinogens, as well as endocrine disruptors (EFSA Journal 2012;10(6):2704);
- MOSH accumulate in the body and can cause dysfunctions.

What are the sources of mineral oils



Some figures about MOSH/MOAH contamination

Analysis ran in 2017/18 in Switzerland on packed product: 60% of them where contaminated.

In 2015, the NGO foodwatch analyzed MOSH and MOAH concentrations in 120 dry foods and their packaging. The food was purchased in Germany, France and the Netherlands [43]. 83% of the samples contained more than 2 mg MOSH per kg food. MOAH was detected in 43% of the samples (levels of detection: 0.2 mg/kg

for dry foods, 0.5 mg/kg for fatty foods).

In 2016, the Danish Consumer Council THINK Chemicals measured MOHs in 16 different types of cardboard and paper packaging. Seven food samples exceeded MOSH and MOAH concentrations of 24 and 6 mg/kg, respectively [45].

In 2010, analysis on unprinted recycled cardboard contained 300-1000 mg/kg mineral oils of chain

lengths up to 28 carbon atoms.

The mean concentrations of MOSH and MOAH were 433 and 132 mg/kg paper, respectively. In the rice sample, packed with such recycled board, MOSH and MOAH levels were 15 and 4 mg/kg food, respectively. It was further illustrated that MOHs in rice mainly originated from the recycled board and not from printing inks, varnishes or adhesives.

Source

"Food Packaging Forum Dossier - Mineral oil hydrocarbons", June 2017

Focus on bakery products:

Main content:

- MOH contamination due to mineral oil based ink especially used in newspaper and recycled fibers are of particular concern in dry food with long shelf life and fatty foods.
- Thirty bakery bags from Bavarian

market were collected and analysed for MOSH/MOAH content: According to the third draft of the mineral oil ordinance (2014), in case of dry products, 22 of the 30 bakery bags were above the threshold for MOSH and 19 of them above the threshold of MOAH. In case of fatty products, all bags exceeded the threshold of MOSH and 29 of them the threshold of MOAH.

Conclusion:

Bakery bags can contain MOSH and MOAH due to printing inks and the usage of recyclates.

In reality, short time contact limits the mass transfer significantly and lowers the migration potential. However, **unless a functional barrier is used**, the usage of recyclates and mineral oil based printing inks should be avoided.

Source

Poster by Fraunhofer IVV for the 6th International Symposium on Food Packaging - Scientific Developments Supporting Safety and Innovation, 16.-18. November 2016, Barcelona.

Limits for MOSH/MOAH migration

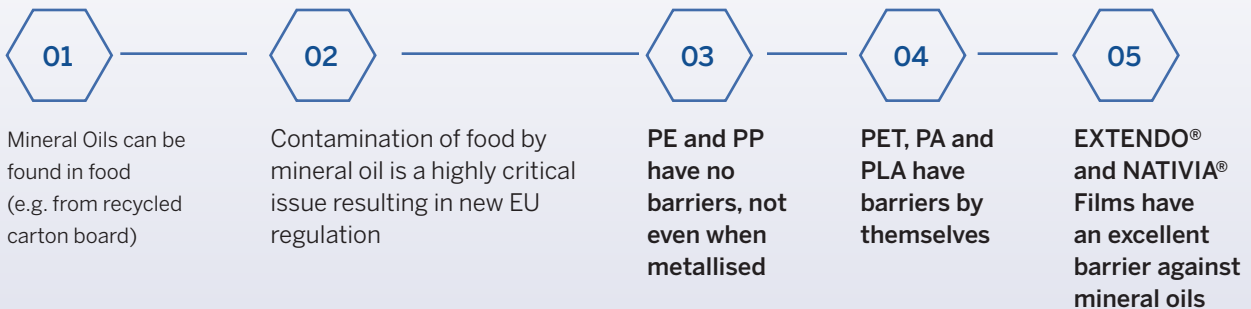
There is not an EU specific law regulating the MOSH/MOAH content in food, only the general provisions defined in the European Framework Regulation on FCMs.

The latest draft of the ordinance from the German Federal Ministry of Food and Agriculture (BMEL) aims

to set an obligation to the use of a functional barrier in FCMs made of recycled or waste paper. Limits of migrations are set on MOAH only: 0.5 mg MOAH/ kg of food or 0.15 mg MOAH/kg of food simulant.

The draft ordinance is still under revision. The timeline is extended from the 18th of November 2020 to the 18th of February 2021.

Did You Know?



Functional barriers against MOH

Barriers against Mineral Oils - Typical Values

Films	lag time @ 23° C
100 µm LDPE films	< 10 hours
30 µm PP film	< 2,1 days
PET	> 3 years
AL foil	> 3 years
EXTENDO [®] XTMH 30	> 3 years
NATIVIA [®] NTSS 20	> 3 years

Source: BASF measurements and results from Grob, K et al, Kantonales Labor Zürich, April 2011