BARRIER OF THE LAYER IN CONTACT WITH FOOD IN MULTILAYER MATERIAL

STEP 1: DETERMINATION OF MARKER COMPOUNDS

The first phase of the study involves the identifications of marker compounds in the multilayer paperboard with plastic film in order to evaluate the functional barrier. If the markers present in the paperboard are in low amounts, they are suitably added.
In particular, aliphatic satured linear and branched from C14 to C25 (MOSH:Mineral Oil Saturated Hydrocarbons) were added for this study. The analysis in performed by solvent extraction of the paperboard and analysis by GC/MS. For the present study a multilayer paperboard without plastic film was used as comparison sample.

STEP 2: FUNCTIONAL BARRIER TESTING

The assessment of the functional barrier is produced by setting up a migration test using a solid simulant (Tenax) by a special steel cell constituted of the multilayer paperboard without plastic film or with plastic film and the Tenax that simulates edible part.

STEP 3: RESEARCH OF MARKER COMPOUNDS MIGRATED INTO TENAX

The objective of the third phase is to verify and determine the marker compounds migrated from packaging material to simulant Tenax to evaluate the barrier effect of the plastic film (layer in contact with food). The Tenax coming from contact with the sample is extracted with diethyl ether and analysed by GC/MS.

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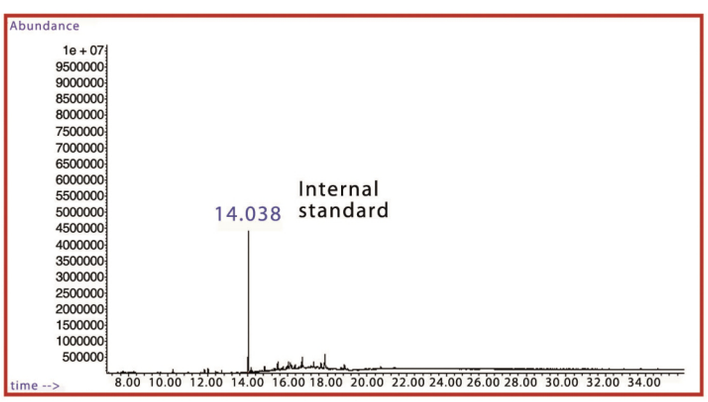
RESULTS:

- Multilayer paperboard with plastic film signed "A"
- Multilayer paperboard without plastic film signed "B"

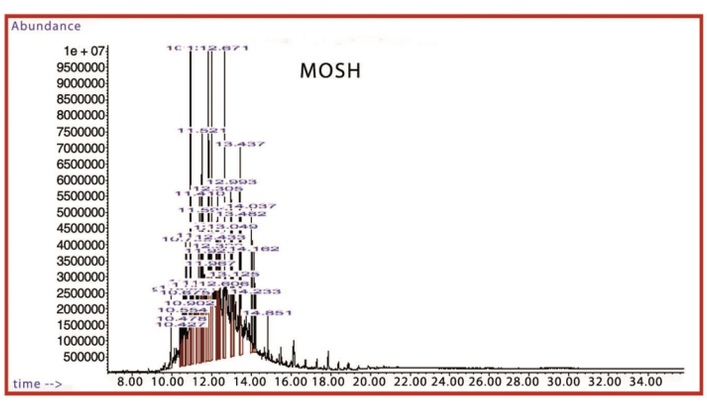
DIFFERENCE OF MOSH PERCENTAGE MIGRATED TO TENAX

Sample / Marker	Multilayer paperboard with plastic film signed "A"	Multilayer paperboard without plastic film signed "B"
Aliphatic Hydrocarbons Total content in paperboard µg/dm2	*1289 sum*	*1289 sum*
Aliphatic Hydrocarbons Migration in Tenax µg/dm2	*< 5 sum*	*1149 sum*
% migrated into Tenax	-	*89.1*

Multilayer paperboard with plastic film signed "A"



Multilayer paperboard without plastic film signed "B"



The study demonstrated the **BARRIER EFFECT** of the **PLASTIC FILM**

This study was carried out in Mara Baronciani's laboratory SEPACK LAB S.R.L.
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