



Confidential Technical Report 49368

Date: 30th September 2008

PROJECT NO: AQ0302

OVERALL MIGRATION TESTING OF PLASTIC FILMS FOR USE AS OXYGEN ABSORBER SACHETS

EVEREST INTERNATIONAL BUSINESS INC.

3645 Edenborough Place
Marietta
GA 30066
USA

For the attention of: John Ying
e-mail: oxyfree00@gmail.com

Yvonne Davies
Author

John A. Sidwell
Principal Consultant
Polymer Consultancy Group

OVERALL MIGRATION TESTING OF PLASTIC FILMS FOR USE AS OXYGEN ABSORBER SACHETS

1. INTRODUCTION

A batch of two films were supplied to Smithers Rapra on the 11th September 2008 (forwarded directly by the film manufacturers, Tianhua Tech Co. Limited, China). The films were designated as follows:

Sample A – 3 layer film – PET (food contact surface), paper, PE.

Sample B – 4 layer film – PET (food contact surface), PE, paper, PE.

The films were intended to be used for oxygen absorber sachets, primarily in meat packaging. Three different formulations of the sachet contents were available and these are shown as follows:

Formula A:

reduced iron powder

diatomite granule

Activated carbon powder

NaCl

Ca(OH)₂

Water

Formula B:

reduced iron powder

Vermiculite granule

Activated carbon powder

NaCl

Ca(OH)₂

Water

Formula C:

Activated carbon powder,

NaCl

Ca(OH)₂

Testing of the outer surfaces of the films to the requirements of the current EC food regulations (EC Directive 2002/72/EC and amendments to date) was requested for overall migration, together with consideration of the general suitability of the films and absorber sachet contents for use in packaging containing meat and similar foodstuffs.

2. EXPERIMENTAL

Overall migration testing was undertaken on the film samples in triplicate, using the total immersion procedure (essentially to EN 1186, part 14).

A 10cm x 10cm pouch was prepared from each film with all 4 sides of the pouch sealed using a heat sealer (the food contact surface being on the outside). The sample pouches were then folded and placed into large, glass test tubes containing 100ml of iso-octane fatty food simulant and then placed into a thermostatically controlled laboratory at 20° C for 2 days (equivalent to 10 days at 40°C with olive oil). Duplicate blank iso-octane simulants were also tested at 20° C for 2 days.

After 2 days testing, the sample pouches were removed and all test solutions gently evaporated to dryness in pre-conditioned glass dishes on a water bath. Blank simulants were also evaporated to dryness.

All analytical testing was undertaken between 15th and 18th September 2008.

3. RESULTS

The overall migration from the films has been determined as follows:

Film Sample	Overall Migration mg/dm ²	Mean
A	2.0, 2.2, 2.1	2.1
B	3.8, 4.3, 3.7	3.9

The EC Directive for overall migration is 10mg/dm². Data obtained with both films, under the tested conditions, is well within this limit.

As previously discussed, reduction factors apply to the permitted level of overall migration, depending on the fatty nature of the food in contact with the films. For food oils, there is no reduction factor but for meat, the reduction factor is 4, allowing overall migration values up to 40mg/dm² with olive oil (or substitute fatty food simulants). For fish, the reduction factor is 3. In the testing undertaken on the two films intended to be used as oxygen absorber sachets, the overall migration data obtained is well within the limit for long term contact of the films, for use with all food types.

4. DISCUSSION

In actual use, the two films when used as oxygen absorber sachets are likely to only have minimal contact with food. With PET being used as the food contact surface of both films, there are no issues with regards to overall migration (as our testing has shown) and also with regards to the specific migration of monomers present. In view of the in use conditions of the sachets, migration of any antioxidants or additives from the PET would not be expected to be at any levels which would cause concern.

Although no information on the purity of the active carbon has been provided, other ingredients used in the absorber sachets are not of toxicological concern. Therefore, from the migration data obtained and as the risk of contamination of the food with the sachet contents are low, it is possible to make the safety assessment that there is negligible risk to consumers in use of the absorber sachets.

5. CONCLUSIONS

A batch of two films (intended for use as oxygen absorber sachets), supplied to Smithers Rapra on the 11th September 2008 have been tested to the requirements of the current EC food regulations (EC Directive 2002/72/EC and amendments to date) for overall migration. Consideration of the general suitability of the films and absorber sachet contents (full details in the Introduction section of this report), for use in the packaging of meat and similar foodstuffs was requested.

From the testing undertaken and safety considerations made, the two films designated A and B are considered to be fully compliant to the EC food regulations for use with packaging for all food types. The outer surface of the films complies with EC Directive 2002/72/EC and amendments for long term contact with foods, at temperatures up to 40°C.

All data is as reported in the Results section of this report.

6. LIMITATIONS

This report has been prepared solely based on the information supplied up to the point of its completion and has been accepted in good faith.

The samples tested were a selection of those provided by the client and no responsibility can be taken for them being unrepresentative.

End of Report
