

Filtering Frying Oils

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Frying fats and oils have a finite useful life with traditional oil management procedures. The degradation rate is affected to a certain degree by the presence of antioxidants or filtering with inert or non-inert treatment.

Used frying oils were treated with filter papers, stainless steel mesh belts and commercially available adsorbents (Magnesol, Frypowder, Britesorb, Filtercorp, Maxfry). The efficiency of these products and adsorbents in used frying oils has been studied several times before. In these tests, often a degraded frying oil dissolved in non-polar organic solvent was passed through a column of the adsorbent. This procedure does not correspond to the practical conditions filtering hot frying oil. During filter treatment of frying oil the interactions with the adsorbents are totally different from the conditions in a laboratory test using a column chromatography where the oil is dissolved in organic solvents.

A controlled frying test that simulates the filtering procedure was performed to examine the adsorbent capacity of the solid materials. 100 g of a degraded oil was heated at 170 °C in a vessel (capacity 200 ml). After the addition of 1 % (resp. 5 % in a second trial) adsorbent the suspension was stirred for 10 min under heating and filtered. Measurements and practical tests with used oils indicated that the oil temperature above 140 °C was best suited for active filtration due to lower viscosity.

The effectiveness of a simple filtering using paper, charcoal containing papers and steel sieves was also tested.

All the products have a good filtering effect on removing dispersed particulates from the oil. Only charcoal containing adsorbents reduce colour without reducing degradation products. Many products remove moisture from the frying oil. Most significant improvement was observed in free fatty acid content (FFA). Some adsorbents reduce free fatty acids by chemically reacting materials like alkali. An active removal of polar and polymerised compounds could not be found.