

Design of Plastic Materials Based on Non-Stick Polypropylene for Improve Food Packaging Hygiene

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Before being consumed, food comes into contact with many materials namely plastic materials during the various processes of production, processing, storage, preparation and serving of food. This contacting is concerned with the phenomena of physical and chemical interaction, the bonding and also the transfer of material. This can lead to adverse effects both in terms of quality, hygiene and public health.

The aim of this work is oriented towards the design of anti-adhesion polypropylene materials by modifying in the standard formula of the basic material. In this work, three different formulations incorporating known natural components of their antibacterial effect were studied. The material was developed by extrusion process. The anti-biofilm effect of the material was confirmed by adhesion tests and observations by MEB scanning electron microscopy.

The new material was analyzed by infrared in order to highlight the structural modifications of the groups exposed on the surface of pipelines. The contact angle allows the detection of any modifications of the hydrophobicity and the acid-base character which will make it possible to explain certain variabilities observed after adhesion test.

The mechanical properties of the new material were also evaluated and discussed and compared to the properties of the material developed according to the standard formula.