



## Food Packaging and Shelf Life

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## Innovations in Food Packaging, Shelf Life and Food Safety

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In recent years, the development of novel food pack methods and techniques has not only increased the foods, but also improved their safety and quality. **Inr Food Packaging, Shelf Life and Food Safety** will | platform for delegates from industry and academia t and develop new concepts and technologies require the development of new packaging materials, explor technologies for food applications, and examine the packaging materials on shelf life and food safety. Th conference will also focus on food package sustaina

including bio-based packaging materials such as edible films which are the focus of new research

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[P2.23]

**Migration kinetics of Irgacure<sup>®</sup> 907 and 1173 to food simulants**

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UV inks, since their discovering in the 40's, became a very popular printing option for food packaging due to their benefits over the classical solvent-based inks. Nevertheless, substances used in the formulation of this type of inks could potentially reach the foodstuffs from the packaging by three mechanisms: indirect transfer by vapour phase, direct transfer through the package and by set-off (when the packaging material or articles are stored in reels or stacks, passing from the outer to the inner surface). The aim of this work was to study the migration kinetics of two common photoinitiators used UV inks for food packaging: Irgacure<sup>®</sup> 907 and 1173.

Each photoinitiator was incorporated in a LDPE matrix and then additivated films were obtained by extrusion. The resulting films were immersed into the food simulants regulated in the current European legislation for plastics (except for Tenax<sup>®</sup>). The migration kinetics were performed at three different temperatures 4, 20 and 40°C. The effect of the temperature on the diffusion of photoinitiators was study applying Arrhenius equation. The diffusion and partition coefficients were estimated by fitting the experimental data with the mathematical model based on Fick's Second Law.

The data obtained in this work provides reliable information about the migration of two of the most used photoinitiators in UV inks for food packaging. The results showed that the process of migration is highly dependent on the storage conditions, the photoinitiator properties and even the pH of the foodstuff.

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