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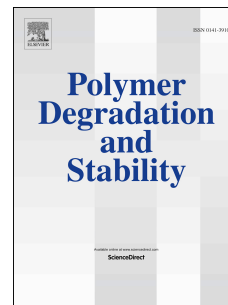
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Mechanical and degradation behaviour of multilayer barrier films

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Abstract

The use of innovative flexible multilayer barrier films in the food packaging and the agricultural sectors is growing rapidly. A series of experimental PE-based multilayer films with barrier EVOH and PA layers, which simulate specific features of films used in the agrifood sector, was produced with different percentages of stabilisation. An experimental methodology was developed for the analysis of the mechanical behaviour of these specially designed multilayer films. The photodegradation behaviour of the multilayer films was investigated, by exposing them to controlled accelerated ageing. It was shown that the presence of a low ductility barrier layer, adversely affects both, the mechanical and the ageing behaviour of multi-layer films without stabilisation. Likewise, the stabilised multilayer films with barrier experience a shorter lifespan, than the multilayer stabilised PE films without barrier layers. The results suggest that the possible use of barrier layers in agricultural or food packaging multilayer film structures, should take into consideration the detrimental effect of these layers in their mechanical behaviour and durability.

Key words: multilayer films, barrier layer, degradation, mechanical behaviour, agricultural films, packaging films

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