

Impact of Solar Radiation Effects on the Physicochemical Properties of Unformulated Polyethylene (PE) Plastic Film

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Abstract : This study deals with the photodegradation of unformulated polyethylene films for greenhouse covering. The UV range of solar light appears as the most deleterious factor of plastic degradation in outdoor exposure. The reasons of this photosensitivity are structural defects which are light-absorbing. The use of FTIR as an investigation tool has revealed that the material reacts with surrounding oxygen via a photooxidation process. Although the photochemical process is quite complex, it appears through this study that crosslinking and chain scissions are the most important events taking place during aging. These two key reactions change irremediably the average molecular weight affecting thus drastically the mechanical properties and reducing, in the same way, the service lifetime of the films.

Keywords : polyethylene, films, unformulated, FTIR, ageing

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