

PLASTICIZER EFFECT ON  $\bar{M}_n$  OF  $\gamma$ -IRRADIATED PVC

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In this work we studied the changes of  $\bar{M}_n$  of samples of PVC compound (containing about 20% of dioctyl phthalate as plasticizer) and PVC resin (without plasticizer). The samples were irradiated at  $\gamma$ -rays from  $^{60}\text{Co}$  source with doses of 0-150kGy and dose rate of 0,9kGy/h at room temperature and in the presence of air. The  $\bar{M}_n$  was determined by gel permeation chromatography. The variation of  $\bar{M}_n$  was studied in function of the dose. The decrease of the  $\bar{M}_n$  occurred when the PVC resin was  $\gamma$ -irradiated in the presence of air. In this conditions the scission reactions predominated. The decrease of  $\bar{M}_n$  was about 33% at doses between 0kGy and 50kGy and the total decrease of  $\bar{M}_n$  was about 23% at 150kGy relating to the  $\bar{M}_n$  at 0kGy. When the PVC resin was  $\gamma$ -sterilized ( $\sim 25\text{kGy}$ ) the scission was the main reaction. and the crosslinking reactions increased above 35kGy because the scissions of C-Cl it were enough to allow the reactions between two macroradicals. By the other side the irradiation of the PVC compound in the same conditions promoted the increase of  $\bar{M}_n$  about 16% and became most pronounced above 80kGy indicating that the presence of the plasticizer protects the PVC against scission and oxidation reactions because its aromatic rings acts as excitation scavengers.

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