

## Electron Beam Processing of Ethylene-Propylene-Terpolymer-Based Rubber Mixtures

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**Abstract :** The goal of the paper is to present the results regarding the influence of the irradiation dose and amount of multifunctional monomer trimethylol-propane trimethacrylate (TMPT) on ethylene-propylene-diene terpolymer rubber (EPDM) mixtures irradiated in electron beam. Blends, molded on an electrically heated laboratory roller mill and compressed in an electrically heated hydraulic press, were irradiated using the ALID 7 of 5.5 MeV linear accelerator in the dose range of 22.6 kGy to 56.5 kGy in atmospheric conditions and at room temperature of 25 &deg;C. The share of cross-linking and degradation reactions was evaluated by means of sol-gel analysis, cross-linking density measurements, FTIR studies and Charlesby-Pinner parameter ( $p_0/q_0$ ) calculations. The blends containing different concentrations of TMPT (3 phr and 9 phr) and irradiated with doses in the mentioned range have present the increasing of gel content and cross-linking density. Modified and new bands in FTIR spectra have appeared, because of both cross-linking and chain scission reactions.

**Keywords :** electron beam irradiation, EPDM rubber, crosslinking density, gel fraction

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