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Effects of electron-beam irradiation on mechanical and barrier properties of commercial high oxygen barrier coextruded flexible food packaging material

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Effects of electron-beam irradiation on mechanical properties and oxygen permeability for a commercial high oxygen barrier coextruded flexible food packaging material are discussed. The coextruded film based on low-density polyethylene (LDPE), ethylene vinyl alcohol copolymer (EVOH) and polyamide (PA) was irradiated using a 1.5 MeV electron beam accelerator with doses up to 100 kGy, at room temperature and in the presence of air. The results showed that radiation doses (15-100 kGy) induced significant mechanical property decrease ($p < 0.05$) with even loss of the tensile strength and percent elongation at break of the coextruded flexible film. In contrast, oxygen permeability of the film irradiated showed increase in the oxygen barrier at absorbed doses of 15 and 30 kGy and significant decrease for 100 kGy.