

Crosslinking of polyolefin foam II. Applicability of parameters to assess crosslinking/foam density relationships

Abstract

The effect of introducing triallyl cyanurate (TAC) monomer, into dicumyl peroxide (DCP) crosslinking systems for low-density polyethylene (LDPE) is considered. In the foam formation, chemical blowing used in a fixed amount of 8.0 phr. Effects are characterised as a function of relative concentrations in solid, melt and foamed states. It was observed that gel content could only be used as a reasonable indicator to predict foaming behaviour only for traditional crosslinking with DCP alone. The results also showed that melt modulus seemed a better indicator when TAC was incorporated in the system but appeared only to be particularly relevant at a specific TAC concentration. It was found that swell ratio better controls expansion prediction whereas foam density determines physical and mechanical properties independent of formulation. Moreover, swell ratio appeared to be able to define expansion characteristics not only of traditional crosslinking systems but also those containing triallyl cyanurate monomer.