

Blends of maleated HDPE and maleated EPDM rubber with supramolecular hydrogen bonding

김선근, 박지훈, 장영욱*
한양대학교 화학공학과
(ywchang@hanyang.ac.kr*)

In this study, blends of maleated ethylene-propylene-diene monomers and maleated high-density polyethylene (hereafter, abbreviated mEPDM and mHDPE) with supramolecular hydrogen bonding were studied. The blends were prepared with composition ranging from mEPDM/mHDPE 90/10 to 50/50, parts of weight, in a Haake rheomixer at 170°C and at a rotor speed of 60 rpm. 3-Amino-1,2,4-triazole (ATA) was added to the blend as a compatibilizer.

The mEPDM/mHDPE/ATA blends exhibit a synergism in mechanical properties: they showed a higher tensile strength and elongation at break, tear strength than the corresponding neat blend without ATA. From DMA measurement of the blends with ATA, rubbery plateau region was found to be extended to 180°C, which is not observed in the blends without ATA. This is believed to be due to the formation of supramolecular hydrogen bonding networks through the reaction of ATA with maleic anhydride existed on the side chain of the two polymers. Furthermore, the blends behave as a thermoplastic elastomer.