

عنوان مقاله:

Effects of cast extrusion line speed on the crystallinity of LLDPE stretch films

محل انتشار:

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نویسندگان:

Ali Yadegari - Faculty of Petroleum, Gas and Petrochemical Engineering, Persian Gulf University, Bushehr ۷۵۱۶۹, Iran

Hoda Bayazian - Kunststofftechnik Paderborn (KTP), Paderborn University, Paderborn ۳۳۰۹۸, Germany

Volker Schöppner - Kunststofftechnik Paderborn (KTP), Paderborn University, Paderborn ۳۳۰۹۸, Germany

خلاصه مقاله:

Influence of line speed on the crystallinity of linear low density polyethylene (LLDPE) stretch films manufactured in a cast extrusion line was examined using differential scanning calorimetry (DSC) and wide angle X-ray diffraction (WAXD). The multilayer LLDPE films were prepared at wide range of line speeds from ۲۰۰ to ۱۰۰۰ m/min. The DSC results showed that there is an increase in the crystallinity of films at higher line speeds. Furthermore, evaluating melting endotherms indicated that the size of crystals was more uniform as the line speed increased. Crystallinity of films obtained from WAXD analysis also exhibited the similar trend of DSC results, though their values were different. In addition, there was a reduction in crystal size calculated from WAXD data upon increasing the line speed. The observed increase in crystallinity and decrease in crystal size was due to enhanced flow induced crystallization (FIC) as a result of greater shear stresses the polymer melt encountered at higher line speeds.

کلمات کلیدی:

LLDPE; cast film; Crystallinity; DSC; WAXD

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