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Influence of die surface on the efficiency of fluoropolymer processing aids during the extrusion of linear-low density polyethylene.  (English)  

Summary: Nowadays, fluoropolymer based Polymer Processing Aids (PPA) are currently used to eliminate surface defects and to reduce die pressure in linear polyolefins extrusion. For 10 years, the main origins of the PPA actions are known: PPA discontinuously coat the die surface and create wall slip that delays the sharkskin defect. However, the microscopic parameters that govern PPA efficiency are not really understood. Based on several experimental measurements (Laser Doppler Velocimetry, Scanning Electron Microscopy, surface analysis), we propose an analysis of the mechanisms of PPA actions in various extrusion conditions. Different kinds of die surfaces have been studied and the results show that PPA efficiency can be greatly improved by controlling die topology and chemistry.

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