

## Polyethylene blends: A correlation study between morphology and environmental resistance

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### Abstract

HDPE is widely used in outdoor applications in which dielectric, mechanical and thermal behaviors combined with high environmental resistance are a major concern. Unfortunately, the required processing conditions of the material often result in residual stresses that in connection with environmental exposure are responsible for premature failure. In an attempt to combine good durability with more facile processing conditions for HDPE based components, blends of this polymer with LDPE and LLDPE were studied, as a function of the blend composition ratio. Measurements of crystallinity and dynamical mechanical studies were conducted which established a quantitative relationship between morphological features and composition. The optimal results of performance were obtained with HDPE/LLDPE blends which are discussed here in terms of their morphology and mobility of the amorphous phase.

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