

Abstract

Demand for high-density polyethylene (HDPE) for industrial production of domestic and commercial commodities has made it necessary to find ways of improving its mechanical properties. A viable approach towards this is the addition of reinforcements such as glass fibers. However, glass fiber reinforced composites suffer limitations because of reduced recyclability, great weight and difficult to thermo-form. In order to improve properties such as specific strength, stiffness and thermoformability of the composite and maintain recyclability, self-reinforced HDPE composites are considered as an alternative to glass fiber reinforced HDPE. In this study, self-reinforced highdensity polyethylene composite was fabricated by film stacking HDPE films and HDPE fibers under carefully controlled temperatures (128–142°C), pressure (2MPa) and time (100 seconds to 350 seconds). Test results indicated that an optimum temperature of 133⁰C and an optimum time of 300s showed effective self-reinforcement.