

Investigations on Injection Molding Conditions for Making Flax Fibre-High Density Polyethylene Biocomposites

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Oilseed flax fibre, a very large renewable resource in Western Canada, has been recognized as a potential replacement for glass fibre to reinforce plastic. Develop flax fibre reinforced composites-innovative lightweight, strong and environmental friendly materials – to be used in the plastics industry will not only contribute to the economic growth, but also benefit to the environment. In authors' previous work, flax fibre-HDPE biocomposites had been developed via injection molding which is an important processing method with the characteristic rapid production rate. In this paper, the injection processing conditions including injection temperature, pressure, and cooling time were discussed for flax fibre-HDPE biocomposites. It was found that injection temperature had a significant influence on mechanical properties of the biocomposites compared with injection pressure. The processing temperature of lower than 195°C was recommended for making biocomposites. To estimate the minimum cooling time during injection molding, the thermal properties of biocomposites were studied. How the minimum cooling time related with mold, injection, and ejection temperatures were discussed.