

ABSTRAK

PENGARUH PERLAKUAN PANAS SERAT TERHADAP SIFAT TARIK SERAT TUNGGAL DAN KOMPOSIT CANTULA-*r*HDPE

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Sifat komposit ditentukan oleh sifat serat, matrik, dan ikatan yang terbentuk antara serat dan matrik. Peningkatan sifat serat serta komposit dapat dilakukan dengan perlakuan panas. Penelitian ini bertujuan untuk mengamati pengaruh perlakuan panas terhadap sifat tarik serat dan komposit. Pada penelitian ini, perlakuan panas serat dilakukan selama 10 jam dengan variasi temperatur 100°C, 120°C, 140°C dan 160°C. Pembuatan spesimen serat tunggal mengacu pada *American Standard Testing and Material C1557*. Pembuatan komposit dilakukan dengan metode tekan panas. Parameter proses yang dipilih meliputi temperatur 150°C, waktu penahanan 25 menit dan tekanan pengepressan 50 bar. Pengujian yang dilakukan terdiri dari uji tarik serat tunggal dan uji tarik komposit. Selain itu, pengamatan permukaan serat dan ikatan antar muka serat-matrik dilakukan menggunakan *scanning electron microscope*. Hasil pengujian menunjukkan bahwa kekuatan tarik serat dan komposit mengalami peningkatan pada perlakuan panas serat sampai dengan 140°C dan akan menurun pada perlakuan panas di atasnya

Kata kunci: perlakuan panas, serat cantula, tarik serat tunggal, tarik komposit, komposit cantula-*recycle high density polyethylene*.

ABSTRACT

EFFECT OF HEAT TREATMENT ON TENSILE PROPERTIES OF SINGLE FIBER AND COMPOSITE CANTULA-rHDPE

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The composite properties determined by the properties of the fiber, matrix, and the bond between the fiber and the matrix. Improved properties of fibers and composites could be done by heat treatment. This research was aimed to investigate the effect of heat treatment on the tensile properties of fibers and composites. In this research, the heat treatment of the fiber was done for 10 hours with a temperature variation of 100°C, 120°C, 140°C and 160°C. Making a single fiber specimen referred *American Standard Testing and Material C1557*. Manufacture of composites was conducted using a hot press. The process parameters were selected to include a temperature of 150°C, for 25 minutes with pressure of 50 bars. Testing conducted consisted of a single fiber tensile test and composites tensile test. In addition, observation on the fiber surface and bond interface fiber-matrix was done using a scanning electron microscope. The test results showed that the tensile strength fibers and composites increased in the heat treatment of fibers up to 140°C and would decrease the heat treatment on it.

Keywords: heat treatment, cantula fiber, single fiber tensile, composite tensile, cantula-recycle high density polyethylene composite.