

INTISARI

PENGARUH MALEATED POLYPROPYLENE (MAPP) TERHADAP KUATAN TARIK KOMPOSIT SISAL POLYPROPYLENE (PP)

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Komposit berpenguat serat sisal dengan matriks *polypropylene* (PP) telah berhasil dibuat melalui tahap *treatment* serat dengan perlakuan *scouring* dan pencetakan komposit. Serat sisal terlebih dahulu dipisah menjadi tiga bagian (pangkal, tengah, dan ujung) untuk uji *tensile* serat tunggal. Bagian serat terbaik akan dijadikan bahan penguat komposit. *Scouring* dilakukan dengan merendam serat sisal dalam larutan 60 g/L NaOH pada suhu ~100 °C selama 1 jam. Pencetakan komposit meliputi pencampuran serat (50% massa) dengan ukuran ~1 mm dan potongan plastik PP berukuran 17 cm × 2 cm (50% massa) dengan tipe *laminated composites* (lapis), dilanjutkan proses *hot press* dengan tekanan 5,5 MPa pada suhu 170 °C selama 3 menit. Uji SEM membuktikan bahwa proses *scouring* mampu mengurangi komponen non selulosa pembungkus serat. Pengujian mekanik pada komposit sisal-PP menunjukkan bahwa penambahan MAPP 5% dapat meningkatkan sifat mekanik komposit dan meningkatkan tipe komposit sesuai *American Society for Testing and Materials* (ASTM) tipe D638-02a. Hasil analisis SEM memperlihatkan ikatan yang terbaik antara bahan penguat (serat sisal) dengan matriks (PP) dan dengan sifat mekanik terbaik dari komposit serat sisal adalah komposit serat sisal mentah ditambah MAPP 5%.

Kata kunci: serat sisal, komposit, MAPP, *scouring*, *Tensile strength* ASTM D638-02a, SEM.

ABSTRACT

THE INFLUENCE OF MALEATED POLYPROPYLENE (MAPP) ON THE TENSILE STRENGTH OF SISAL POLYPROPYLENE (PP) COMPOSITE

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Composite reinforcing sisal-fiber with a matrix of polypropylene (PP) has been created through the stage of treatment fiber with the treatment of scouring and molding composites. Sisal fiber is previously divided into three parts (base, middle, and end) for a single fiber-tensile test. The best part of fiber will be used as a reinforcing composite. Scouring is made by soaking the dry sisal fiber in a solution of 60 g/L NaOH at temperature 100 °C for a hour. Molding composites involves of mixing fiber (50% of mass) with 1 mm size and plastic pieces PP which is 17 cm x 2 cm size (50% of mass) with the type of laminated composites (layers), carried on the process of hot press with 5.5 MPa pressure at 170 °C temperature for 3 minutes. SEM test shows that scouring process is able to decrease non-cellulosic component of fiber wrapping. Mechanical testing on sisal-PP composites shows that the addition of 5% MAPP can improve the mechanical properties of composites and composite type corresponding an American Society for Testing and Materials (ASTM) D638-02a type. The result of SEM analysis shows that the best bond between the reinforcing material (sisal fiber) with matrix (PP) and the best mechanical properties of sisal fiber composites are a raw sisal-fiber composites with additioning 5% MAPP.

Keywords: Sisal fiber, composites, MAPP, scouring, *Tensile strength* ASTM D638-02a, SEM