

# Sintesis dan komparasi kertas tisu biodegradable berdasarkan SNI 0103:2008 kertas tisu toilet berbahan baku selulosa, kitin dan kitosan = Synthesis and comparison of biodegradable tissue paper based on SNI 0103: 2008 toilet tissue paper made from cellulose, chitin and chitosan

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## Abstrak

Saat sekarang label biodegradable merupakan salah satu kriteria dalam pemilihan sebuah produk. Kertas tisu biodegradable dalam penelitian ini dibuat dari selulosa yang dikombinasikan dengan kitin dan kitosan. Selulosa, kitin, dan kitosan bersifat biodegradable. Selain itu, selulosa memiliki gugus hidroksil yang melimpah sehingga meningkatkan hidrofilisitas kertas tisu. Masing-masing kitin, kitosan sintesis dan kitosan komersial divariasikan dengan konsentrasi 0,1, 0,3, 0,5, 0,7, dan 1% terhadap selulosa. Perlakuan dalam proses isolasi selulosa, kitin dan kitosan serta kertas tisu yang dihasilkan dikarakterisasi FTIR, XRD, dan FESEM. Hasil uji SNI 0103:2008 Kertas Tisu Toilet menunjukkan bahwa kertas tisu yang dihasilkan memiliki penampakan yang bersih, lembut, dan tidak berlubang. Kertas tisu memiliki warna putih dan tidak luntur, dapat hancur dalam air, serta dapat menyerap air melebihi standar yang ditentukan. Tiga kriteria utama dalam penilaian kertas tisu terbaik dalam penelitian ini meliputi daya hancur dalam air, daya serap, dan laju degradasi. Kertas tisu terbaik berdasarkan uji mudah hancur yaitu kertas tisu dengan 1% kitin. Hasil uji daya serap kertas tisu menunjukkan bahwa kertas tisu terbaik yaitu kertas tisu dengan 1% kitin, 0.1% kitosan sintesis, 0.1% kitosan komersial yang memiliki daya serap sebesar 131 mm, 141 mm, dan 92 mm masing-masingnya. Sedangkan berdasarkan uji biodegradabilitas, kertas tisu terbaik yaitu kertas tisu dengan 1% kitosan komersial dengan laju degradasi sebesar 11.35%. Berdasarkan uji mudah hancur, uji daya serap, dan uji biodegradabilitas, kertas tisu terbaik yang dihasilkan yaitu kertas tisu dengan 1% kitin.

.....Currently, the biodegradable label is one of the criteria in selecting a product. The biodegradable tissue paper in this study was made from cellulose combined with chitin and chitosan. Cellulose, chitin, and chitosan are biodegradable. In addition, cellulose has abundant hydroxyl groups which increase the hydrophilicity of tissue paper. Each chitin, synthesis chitosan and commercial chitosan were varied with concentrations of 0.1, 0.3, 0.5, 0.7, and 1 w/v% to cellulose. The treatments in the isolation process of cellulose, chitin and chitosan and the resulting tissue paper were characterized by FTIR, XRD, and FESEM. The SNI 0103:2008 Toilet Tissue Paper test results showed that the tissue paper produced had a clean, soft, and had not perforated appearance. Tissue paper has a white color and does not fade, can be destroyed in water, and can absorb water beyond the specified standards. The three main criteria in assessing the best tissue paper in this study include crushability in water, water absorption, and degradation rate. The best tissue paper based on the crushability test is tissue paper with 1 w/v% chitin. The tissue paper absorption test results showed that the best tissue paper was tissue paper with 1 w/v% chitin, 0.1 w/v% synthetic chitosan, 0.1 w/v% commercial chitosan which had an absorption capacity of 131 mm, 141 mm, and 92 mm respectively. Meanwhile, based on the biodegradability test, the best tissue paper was tissue paper with 1 w/v% commercial chitosan with degradation rate was 11.35%. Based on the crushability test, absorption test, and biodegradability test, the best tissue paper produced was tissue paper with 1w/v% chitin.