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Comparison of Different Chemical Pulps from Wheat Straw and Bleaching with
Xylanase Pre-Treated ECF Method



Saim ATEŞ¹, Celil ATİK², Yonghao NI³, Esat GÜMÜŞKAYA⁴

¹Kastamonu University, Faculty of Forestry, 37200 Kastamonu - TURKEY

²Istanbul University, Faculty of Forestry, 80895 Bahçeköy, İstanbul - TURKEY

³Limerick Pulp and Paper Centre, UNB, Fredericton, NB, E3B6C2, CANADA

⁴Karadeniz Technical University, Faculty of Forestry, 61080 Trabzon - TURKEY

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 [Authors](#)



agric@tubitak.gov.tr

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Abstract: Different pulping processes, kraft-anthraquinone (AQ), bio-kraft, soda-AQ, ALCELL, and FORMACELL were studied for wheat straw. Fungal pre-treatment with *Ceriporiopsis subvermispora*, white rot fungi, was applied to wheat straw before kraft-AQ pulping, the so-called bio-kraft process. Fiber properties, carbohydrate contents, FT-IR analyses, strength properties of resultant paper, and bleachability characteristics were included to determine the properties of these pulp samples. In addition, the effects of the xylanase pre-treatment on the subsequent Elemental Chlorine Free (ECF) bleaching process were investigated. The results indicated that kraft-AQ pulps from wheat straw exhibited better characteristics than the other pulp samples with lower kappa number, higher carbohydrate content, higher paper strength properties, and better bleachability. The highest kappa number, viscosity, and fiber coarseness were found for organosolv pulp samples; however, these pulps had the lowest carbohydrate contents and strength values and poor bleachability properties. It was concluded that the fungal pre-treatment of wheat straw with *C. subvermispora* had a positive effect on the bleachability and gave stronger pulp. There was no clear alteration in the crystallinity index of pulp samples based on the FT-IR results.

Key Words: Wheat straw, biopulping, enzyme prebleaching, organosolv pulping, FT-IR

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