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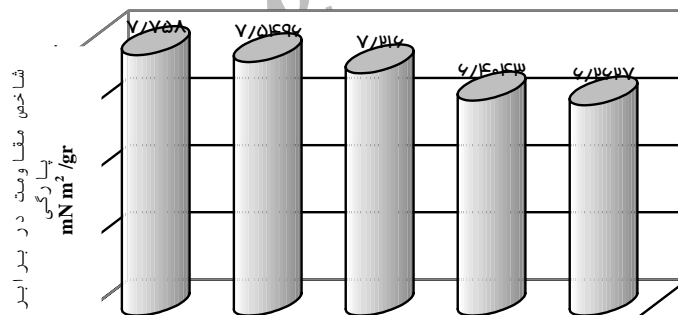
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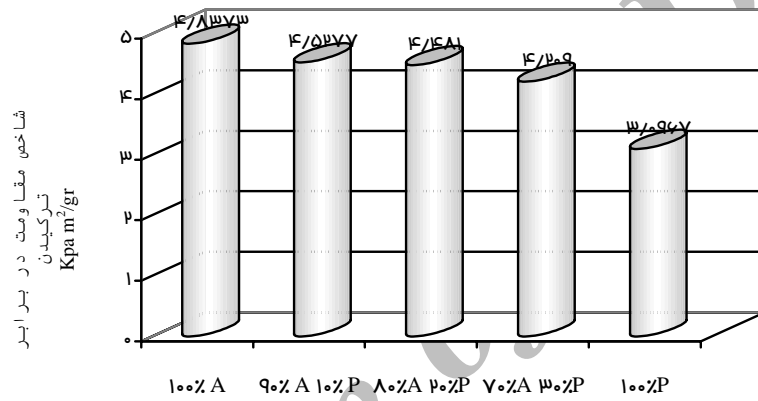
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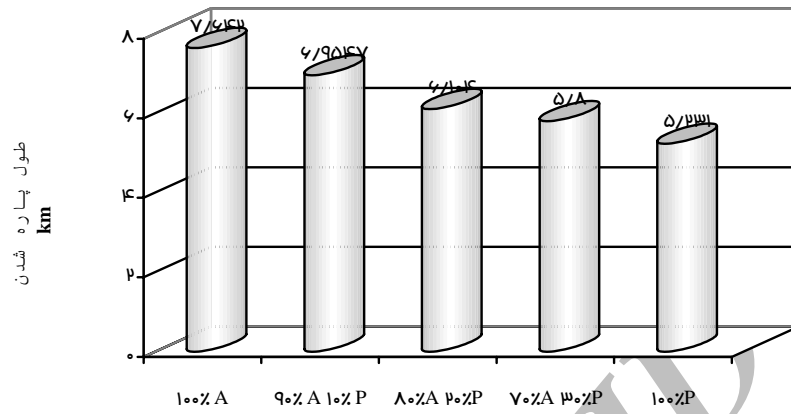
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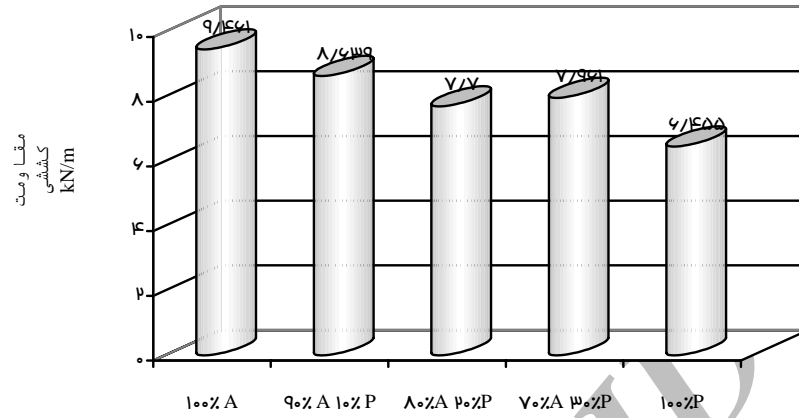
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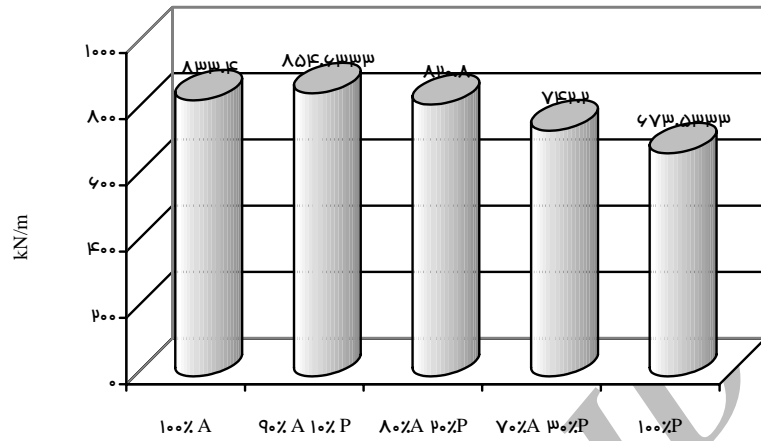
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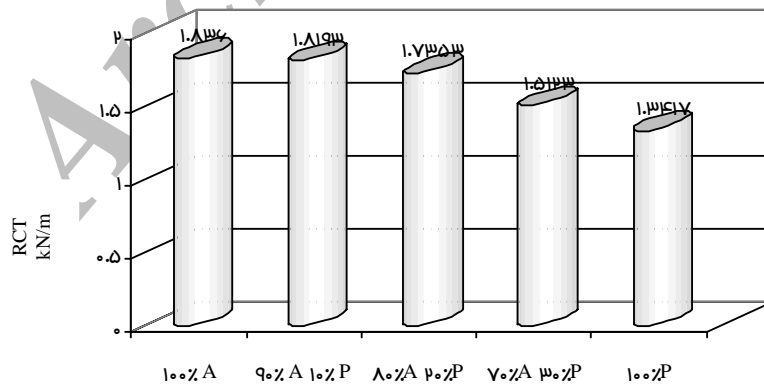




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## Comparative Study on Properties of Paper Produced from Different Ratio of Poplar and Paulownia Species using Neutral Sulfite Semi Chemical (NSSC) Process

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### Abstract

The purpose of this research is to investigate characteristics of the paper made of Paulowina tomentosa and Populus deltroides. Anatomic and chemical properties of the fiber of these plant species were measured at first. According to the measurements, Paulowina tomentosa and Populus deltroides, with average fiber lengths 1,064.60 mc and 977.606 mc, respectively, are categorized as broad-leaved threes with medium fiber length. As compared to Paulowina, Populus deltrioids contains more cellulose and less lignin and extractives. Cooking the paste was performed according to the NSSC process and the wood was treated with 15% sodium sulfite and 7% sodium bicarbonate based on the o.d. weight of the wood material. Regarding the optimum freeness for the NSSC process, freeness of 409 CSF was obtained for Paulowina pulp at the 7,200 rpm while this index was 415 CSF at 3,600 rpm for Populus pulp. The variable in this research was the percentage of the two components in the processed pulp (100% of each species, 90% Populus deltroides + 10% Paulowina tomentosa, 80% Populus deltroides + 20% Paulowina tomentosa, 70% Populus deltroides + 30% Paulowina tomentosa). Investigation on these paper characteristics shows that adding paulownia to pulp up to 10 percent is acceptable and it doesn't affect the strength characteristics of the paper in comparison with the paper of made exclusively of Populus pulp. On the other hand, adding 20% of Paulowina paste to the pulp up to 20% reduces strength characteristics, including burst strength, breaking length and tensile strength but doesn't affect some other strengths such as tear strength and ring crush (RCT).

**Keywords:** Paulownia , Neutral Sulfite Semichemical pulp , Freeness , Refining.

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