

Pyrolysis of the Reed (*Phragmites australis*) and Evaluation of Pyrolysis Products

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Abstract : Reed is especially almost all the lakes in Western Anatolia grows naturally. Due to the abundance of reed, pyrolysis of reed is very economical and practical application. In this study, it is aimed to determine the optimum conditions for the pyrolysis of the reed which is a cheap and abundant raw material and to evaluate pyrolysis products. For this purpose, reed was used obtained from Eber Lake located in the borders of Bolvadin county of Afyonkarahisar. Optimum pyrolysis conditions have been determined by examining the effects of changes in pyrolysis temperature and pyrolysis time. The evaluation of the obtained liquid and solid pyrolysis products has been investigated. Especially evaluability of solid carbon black production of tires has been investigated. Tire samples were prepared with carbon black samples obtained as a result of the pyrolysis process at different temperatures. Then, performance tests were made and compared with reference carbon blacks, used in the market and standards. At the same time, surface area measurement analysis of carbon black samples was made and compared again with reference carbon blacks. In addition, the fuel values of liquid products were also determined by calorimeter. It has been determined that the best surface area (about 370 m²/g) for carbon black samples, for tire production is 40 minutes at 500°C. It was also found that the best result for evaluation studies in tire production was carbon black samples obtained at 450°C pyrolysis temperature. In addition, it was seen that the calorimetry results of the liquid product obtained during 60 minutes of pyrolysis were quite good (around 5500 kcal/kg).

Keywords : evaluation of products, optimization, pyrolysis, reed

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