

## Evaluate the Kinetic Parameters and Characterize for Waste *Prosopis juliflora* Pods

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**Abstract :** The *Prosopis juliflora* (called algaroba in Northeastern Region of Brazil) is a species of medium to large size that can reach 18 meters high, being typical of arid and semi-arid regions by its requirement of less water to survive; this is a fundamental attribute from its adaptation. It's considered of multiple uses, because the trunk, the fruit, and the algaroba pods are utilized for several purposes, among them, the production of wood from lumber mill, charcoal, alcohol, animal and human consumption, being hence, a culture of economic and social value. The use of waste *Prosopis juliflora* can be carried out for like pyrolysis and gasification processes, in order to energy production in those regions where it is grown. Thus this study aims to characterize the residue of the algaroba pods and evaluate the kinetic parameters, activation energy ( $E_a$ ) and pre-exponential factor ( $k_0$ ), the devolatilization process through the data obtained from TG/DTG curves with different levels of heating rates. At work was used the heating rates of 5 K.min<sup>-1</sup>, 10 K.min<sup>-1</sup>, 15 K.min<sup>-1</sup>, 20 K.min<sup>-1</sup> and 30 K.min<sup>-1</sup>, in inert nitrogen atmosphere (99.997%) under a flow of 40 ml.min<sup>-1</sup>. The kinetic parameters were obtained using the methods of Friedman and Ozawa-Flynn-Wall.

**Keywords :** activation energy, devolatilization, kinetic parameters, waste

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