

عنوان مقاله:

Response Surface Methodology Optimization of Sawdust in Water Boiling Test

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خلاصه مقاله:

In the third world, the cutting down of trees for use as firewood is compounding to the environmental issues including global warming. Sawdust is considered as a solid waste, an environmental menace but could be used as means of domestic heating source since it is cheap, reduces deforestation, and can serve as a source of income. In this study, the one-at-a-time design of variables and the Response Surface Methodology (RSM) technique are used to optimize the influential independent variables in Water Boiling Test (WBT) with sawdust as the energy source. The best performing combination with the one-at-a-time design of variables are ۰.۴۵ kg, ۸۵ min, and ۱۱۰۰ mL to attain the temperature of ۹۲ OC while the optimization of the process conditions using the RSM software was conducted. The optimized values predicted from the model were ۱۱۰۰ mL reactor volume, with sawdust of ۰.۵ Kg at ۵۵ minutes to attain a response of ۹۶.۶۴۸ OC and the developed model has fitted to describe the optimum conditions of the experimental data. These findings reflects resource management and solid waste utilization for environmental sustainability

کلمات کلیدی:

Firewood, Sawdust, Response Surface Methodology, Environment, Temperature

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