



THE ENERGETIC ANALYSIS OF THE PYROLYSIS OF TIRE AND ADDITIVES MIXTURES

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ABSTRACT

Approximately 1.4 billion tires are sold annually, leading to a significant amount of waste that requires proper disposal. The development of environmentally friendly technologies are encouraged by the fact that the landfilling of waste tires is prohibited by law throughout the European Union. In addition, strict emission limits are set for incineration. Thereby, the increasing presence of waste tires offers numerous research opportunities. We used pyrolysis as a potential waste treatment method in laboratory conditions. Various additives (such as eggshell, mussel shell, dolomite, alginite, zeolite, calcined mussel shell, calcined eggshell, calcined dolomite, calcined alginite, calcined zeolite) were mixed in a 1:1 ratio with shredded tires to explore the synergistic effects between these during heat treatment. Since one of the most important uses of pyrolysis products is energy utilization, we examined the energy content of the products in addition to the material balances. In this way, we determined the materials which can be beneficial in terms of energy production from pyrolysis products. Based on these findings, we evaluated the results in terms of energy applications.

Keywords: waste tire, pyrolysis, additives, energetic analysis