

RESEARCH AND APPLICATION OF MODIFIED PHENOLFORMALDEHYDE RESIN AS A BINDER IN THE PRODUCTION OF FUEL BRIQUETTES

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Due to the increase in the price of traditionally used energy sources and at the same time environmental problems caused by waste products that pollute the environment, the production and application of shaped (molded) wood-based fuel briquettes to traditionally used biofuels (wood shavings, peat, oil-based fuels, etc.) is of great interest as a prospective alternative. It should be noted that these briquettes have a number of advantages, such as the simplicity of the method of purchase, the synthesis using waste products, the fact that they are environmentally friendly, and unlike oil-based fuels, they do not produce harmful gases in the process of combustion, etc. [1].

Taking into account the advantages mentioned above, we have studied the possibility of obtaining briquettes based on pine and beech trees, modified phenol formaldehyde oligomer as a binding component.

By continuing the research conducted in the field of research and application of modified phenolformaldehyde resin as a binder in the production of fuel briquettes, the effect of the size of sawdust from beech and pine trees taken as a filler on the combustion indicators of the prepared briquettes was investigated. Taking this point into consideration, briquettes were prepared by cold pressing under 15 MPa pressure using 1.6 mm and 0.4–2.0 mm sawdust of pine and beech trees, respectively, as a binding component from the synthesized FF oligomer modified with alkylaromatic hydrocarbons as a binding component. Initially, sawdust was passed through a circular sieve (TGL 7354) with a diameter of 20 cm and holes of 0.4, 1.6 and 2.0 mm, respectively. The main purpose of these studies was to make sawdust and sawdust into briquettes and to study the effect of air humidity and binder on the combustion time of the obtained briquettes. The combustion time of the briquettes prepared by separately adding the FF oligomer used as a binder in the amount of 0.7 % mass to sawdust and sawdust was determined and it was determined that the desired results were obtained based on the analysis of literature materials.

References

1. Ayse B., Muzaffer M., Abdullah C. Phenolic resin binder for the production of metallurgical quality briquettes from coke breeze, Vol. 89, issue 1. P. 28–37.