



DEVELOPMENT OF SAFE TECHNOLOGY OF FUEL BRIQUETTES

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Abstract: Wood waste can be classified according to the range of raw materials (waste of sawn wood, plywood and fiberboard); by types of wood (wood waste, solid wood waste); by humidity (dry - up to 15%, semi-dry -16 - 30%, wet -31% and higher, ultra-humid 100% and higher); according to the structure (piece large, piece medium, piece small, empty); by stages of processing (primary waste, secondary waste).

Keywords: kaolin material, rice, cotton stalk, topon, secondary raw materials, waste, mixing process

Relevance of the topic. In our country, a consistent policy is implemented in the field of ensuring environmental protection, rational use of natural resources, as well as improving the sanitary and ecological conditions of the regions. In particular, in the short term, large-scale work was carried out on the improvement of the infrastructure of the system for the implementation of works related to solid household waste, the establishment of clusters for the complex implementation of work related to household waste with a total capacity of more than a million tons of household waste per year. The measures taken made it possible to increase the coverage of the population with sanitary cleaning services by more than ten times [1].

More than 100 million tons of industrial waste is produced in Uzbekistan every year, about 14% of which is toxic. The largest amount of waste is generated in mining and processing industries located in Navoi, Tashkent, and Fergana regions. Only 0.2% of the generated solid industrial waste is used as secondary raw materials, and the rest is stored in storage tanks. About 10,000 hectares of land in the republic are occupied by industrial waste collectors [2;3].

In accordance with the Law "On Waste", state control over waste-generating enterprises is carried out by the State Committee for Nature Protection of the Republic of Uzbekistan, which maintains the state cadastre of waste disposal and burial sites, maintains the state cadastre . environmental expertise of research and technological developments and project-estimate documents. Fromecological according to the data collected in the database of indicators, the tendency of the annual volume of solid industrial waste to decrease in the following years is being observed in the republic [4;5;6].

According to the information of the State Committee for Nature Protection and relevant ministries and agencies, about 30 million m³ of household waste is produced in the republic per year [7;8]. At the same time, with every million tons of household waste, 360,000 tons of food waste, 160,000 tons of paper and cardboard, up to 55,000 tons of textiles, up to 45,000 tons of plastic and many other recyclable components are lost. .



Methods of research work.Preparation of fuel briquettes in the laboratory. The first step in the preparation of fuel briquettes in the laboratory is to collect all the components, remove impurities and dry them.

Components used in the laboratory:

1. rice stalk.
2. rice husk.
3. stalks and stalks of cotton.
4. water.

Before starting the process of mixing the components, all the components are dried because. excessive moisture of the components interferes with grinding. The following components are dried:

1. rice stalk;
2. Stems and pods of cotton.

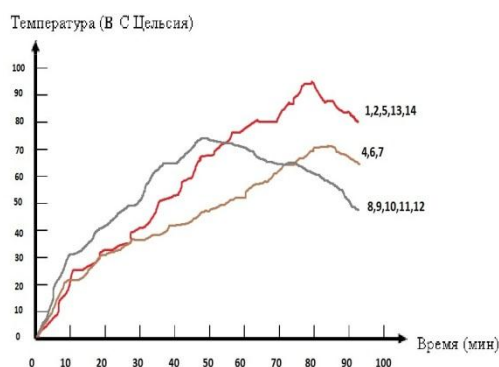
In the process of drying, the internal moisture of the components is removed. The drying process is carried out in an oven at a temperature of 50-700C for 4 hours.

The next step preparation of fuel briquettes in the laboratory - fine grinding of all components to small particles. Grinding is done in a grinder. Polishing coal fines (dust), rice stalk; stalks and bolls of cotton due to its soft texture, it passes without difficulty. Unenriched kaolin (clay) is ground in a mortar. Difficulty in grinding occurs only with cotton stalks, because cotton stalks have a fibrous sheath that interferes with the grinding process. Also, cotton stalks have a more rigid structure compared to other components. In laboratory conditions, the husk of the cotton stalk is cleaned by hand, crushed using two types of grinders.

After drying and grinding, all components are mixed in different proportions. Mixing is carried out in special laboratory glassware with the gradual addition of water and binder -unenriched kaolin - with constant stirring. Connector -unenriched kaolin - soluble in water. Mixing occurs until the mixture has a homogeneous porridge-like mass [3].

Results of scientific research. Tests of fuel briquettes were carried out in a laboratory device. Water is poured into a heat-resistant flat-bottom flask with a capacity of 100 ml fixed on a tripod. A test sample of briquettes was placed under the flask and ignited. The ignition temperature was measured using a thermometer at the water heating temperature. 14 ignition temperatures of the sample were measured. The ignition temperature measurement of sample No. 3 was not performed because the sample did not ignite due to the high content of the binder component.

Graph 1. Time dependence of the burning temperature of briquettes





Only 3 graphs were constructed because the ignition temperatures of some samples were almost the same.

It can be seen that all prepared samples of briquettes can be divided into 3 groups: with low burning temperature (70 ° C); with an average burning temperature (80 ° C); with a high combustion temperature (93 ° C).

Samples 4,6,7 are samples with low burning temperature.

Sample 4 contains a large amount of binderraw kaolinThe wood processing industry contains a large amount of firewood, which deteriorates the combustion process of briquettes. The sample contains a large amount of cotton bolls, which also worsen the burning process of the briquette.

Conclusions and suggestions. In the development of a safe technology of fuel briquettes based on organic waste of food and agriculture, it was proposed to obtain fuel briquettes by studying and analyzing the physico-chemical properties of waste, especially of organic origin. It was found that the obtained fuel briquettes can be used as a source of thermal energy. Such briquettes can be widely used in the rural and sub-mountain areas of the Republic of Uzbekistan, where thermal energy is always in short supply, especially in the autumn-winter season [9;10;11]. As a result of the introduction of this technology for the production of fuel briquettes, which is accumulated on the ground and is not used in practice, Many issues related to the disposal of industrial and agricultural wastes, which are harmful to the environment, are being solved. It is also possible to contribute to the development of small businesses in the area by providing new jobs in the production of fuel briquettes from solid organic waste generated as a result of the use of the proposed technology. Due to the unique production technology and the use of only natural materials in the production process (for example, hemp stalks, rice stalks, kaolin, hemp, hemp husks), fuel briquettes are not harmful to human health during combustion. It is explained by the fact that it does not release toxic substances. It is also possible to contribute to the development of small businesses in the area by providing new jobs in the production of fuel briquettes from solid organic waste generated as a result of the use of the proposed technology. Due to the unique production technology and the use of only natural materials in the production process (for example, hemp stalks, rice stalks, kaolin, hemp, hemp husks), fuel briquettes are not harmful to human health during combustion. It is explained by the fact that it does not release toxic substances. It is also possible to contribute to the development of small businesses in the area by providing new jobs in the production of fuel briquettes from solid organic waste generated as a result of the use of the proposed technology. Due to the unique production technology and the use of only natural materials in the production process (for example, hemp stalks, rice stalks, kaolin, hemp, hemp husks), fuel briquettes are not harmful to human health during combustion. It is explained by the fact that it does not release toxic substances.

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