



METHODS FOR MAKING ECOLOGICAL SAND-POLYMER PLATES

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Rational use of natural resources, and prevention of environmental pollution, especially waste processing are one of the main issues in ensuring environmental well-being in the period of the Revival of the Powerful state.

Nowadays the high demand for polymer products in the world causes the production of polymer products at a higher level. Mass production of these products leads to an increase in the amount of polymer waste. The biodegradation of polymer products continues for a million years. Therefore, the development of new, environmentally friendly materials and products using polymer waste is important for ensuring the well-being of the environment.

The purpose of scientific research is to study the physicochemical properties of polymer products, obtain economically and environmentally friendly products from their waste and prepare important suggestions for the national economy.

The physicochemical properties of polymer products make it possible to obtain economical and environmentally friendly sand-polymer products from their waste. Sand-polymer products are a mixture of solid polymer waste and sand. Sand polymer products are permanent and chemically stable compared to conventional concrete plates. Because the polymers within sand polymer products give them strength, flexibility, durability, and high aesthetic properties. Sand polymer products can be used in the construction industry for the production of roofing material (tiles), plates, well materials, as well cover used in the regulation and management of sewage networks. In consequence, establishing the production of sand polymer products in Turkmenistan will provide a great opportunity to ensure environmental well-being. Sand fractions less than 3 mm, single or secondary processing, crushed polymers (plastics), inorganic dyes, and stabilizers are necessary for the production of sand-polymer plates. Chromium can be used to make sand-polymer plates green, titanium to white, and iron oxides to coral, orange, or brown. For the manufacture of sand-polymer plates, the sand is first cleaned, then mixed with crushed polymers, and processed on special equipment. To perform this process, a press, an extruder, and a concrete mixer are also used. After heating and compression of this material, its moisture resistance increases, and friction decreases [1, 2].

The research was carried out at three different concentrations in the Ecological Biotechnology research center of the Oguz Han Engineering and the Technology University of Turkmenistan according to the methodology and was obtained from sand polymer plates.

The weight of sand polymer plates depends on their dimensions, composition, and manufacturing technology. Based on experiments, the weight of sand-polymer plates is 0.9-0.95 kg. Their thickness was 60-65 mm, and the diameter was 90 mm.

Based on the experiments, the obtained products were tested for resistance to compression and water permeability. According to the results of the experiments, it was found that the best results were obtained by sand-polymer plates obtained from a 1:3 mixture of polyethylene and crushed particles of plastic waste and sand.

The study was carried out in laboratory conditions and the following results were obtained:

- sand-polymer plates are competitive in the world market, and considers a demanded building product with high economic benefits and low material costs;
- the importance of using polymer waste as a filler not only with sand but also with other building materials has been studied;
- based on the conducted research, it was found that sand-polymer plates produced without cement and water with a ratio of 1:3, are comfortable and durable, meet all requirements, and are an environmentally friendly, cost-effective product;
- sand-polymer plates can be installed on bases consisting of sand, sand-gravel mortar, and concrete;
- sand-polymer products, which are also beautiful in decoration, can be used in house building too.

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