



PROSPECTS OF PRODUCTION OF BASALT MATERIALS IN UZBEKISTAN

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Annotation: This article presents the theoretical basis for obtaining thermal products from rocks used in construction. The stages of production of basalt products, the advantages and disadvantages of basalt products, as well as the future role of this product and what basalt itself is are explained in detail.

Key words: basalt, lava, physical method, mold, oxidation, coating, glass, structure, plastic, density.

Introduction: The properties of basalt fibers, their strength, fire resistance, resistance to various external influences and chemical substances, increase the demand for the use of basalt fibers in the production of heat-resistant materials, as well as fire-resistant fabrics. In addition, basalt fibers are widely used in the production of tissues resistant to moisture, various salt solutions, chemical alkalis. The light weight of fabrics made from basalt fibers also brings more convenience to consumers. Vazni is considered to be convenient for use in chemically active environments, metal constructions, construction industry and other industrial fields.

Environmental safety of basalt fibers fully meets world standards. Basalt fibers serve for a very long time due to their durability and high hardness. The use of such fabrics allows to save products and money and increases the safety of industrial facilities. In addition, basalt fibers are widely used in the production of various fire-resistant fabrics, fire protection systems, filters, technical fabrics and non-woven fabrics, reinforcing and composite fabrics. Basalt fibers are also used in the production of heat-insulating products such as plates, fabrics for filters of high-temperature gaseous substances and tissues for storing chemically active liquids, hydroponics in agriculture. The porosity of basalt fiber can be 70% or more. This porous property of basalt fiber reduces the level of thermal conductivity in the fabric. As a result of insulating the walls of multi-storey buildings, the wall itself is warmed first, and as a result, mold does not appear on the inside. After the basalt fiber coating is installed on the wall, the result will start to be felt in 7-8 days. Because after coating, the wall itself should be warmed up [1-2].

Material and Methods: The main characteristics of basalt;

- plastic;
- density;
- high temperature resistance.



Picture 1. The process of using basalt fiber mats in buildings

• **The main advantages of basalt materials (for insulating materials)**

- Low thermal conductivity (0.036-0.045 W/m*K)
- Environmental cleanliness, durability
- Preservation of properties at temperature: from -259 ° C to + 650 ° C
- High sound absorption
- High resistance to aggressive environment
- Not flammable
- Low mass density
- Safety (including radiation)
- Productivity at work
- Dielectric
- Non-hygroscopic

Based on the above-mentioned properties of basalt fiber, basalt fiber and fabrics based on it are increasingly used today in the following fields and purposes:

- for heat and fire protection in residential, industrial buildings and structures, chemical industry and other industries;
- in thermal insulation of energy units, large diameter pipes;
- in heat insulation of household gas and electric stoves, stoves, etc.;
- for thermal insulation of reconstructed buildings installed from inside and outside;
- for insulation of flat roofs;
- for isolation of oxygen columns;
- for insulation of low-temperature equipment in the production and use of nitrogen;
- in industrial refrigerators and cooling chambers, home refrigerators;
- three-story construction in sandwich panels [4].

Results: When creating basalt materials, the creation method can be as follows:

1. Mining and preparation of basalt stone: Basalt is a volcanic rock, mainly composed of basalt minerals. Special equipment is used to extract it and prepare it in the required form.
2. Grade and quality: The quality and grade of basalt must be determined because it affects the final properties of the material. For example, some types of basalt are more durable and resistant to heat, and some are less.
3. Processing process: In order to use basalt materials, it must first be crushed, pressed, melted or made into other desired shapes. Special technologies and furnaces are used in these processes.
4. Creation methods:
 - Hot pressing: Melting basalt, shaping it at high temperature and pressing it in a matrix.
 - Aqueous mixes: Creating foam materials by mixing basalt fibers or crushed basalt with special liquids.
 - Compositing: Combining basalt stone with other materials (such as polymers or other minerals) to obtain new, stronger and more durable materials [5-6].
5. Processing and testing: It is necessary to check and test the quality of the received materials. These

processes provide mechanical and physical properties of the material, resistance to heat and water. Creation methods and processes vary depending on the type of material, intended use and production technology. Materials created from basalt are often used in areas such as construction, road construction, heat and sound insulation [7-8].

Discussion: It is very important to develop discussions and recommendations on this topic, to deepen the scientific and practical approach to the creation of basalt materials and to increase their effectiveness. Below is a detailed explanation of how this process affects the goal and outcome:

1. Purpose of discussion and recommendations:

Research and analysis: Optimizing production processes by analyzing existing methods and testing new approaches in the creation of basalt materials.

Application of innovations: Development of use of modern technologies and methods, introduction of new methods and introduction of innovative approaches to existing processes.

Improving quality: Creating a high-quality product by improving the quality of the obtained materials and increasing its durability and durability.

Economic efficiency: Effective use of resources in the process of material production and reduction of production costs.

2. Development of recommendations:

Modernization of material preparation technologies: Automation and optimization of heat and pressing processes. This can save time and energy.

Use of experimental methods: Testing new methods, for example mixing basalt fibers with other polymer or composite materials to create new materials.

Resource recycling: Ensuring environmental safety and efficient use of resources by recycling basalt waste and surplus materials.

Strengthening quality control: Continuous inspection and testing of the quality of manufactured materials. This ensures the durability and long-term usability of the products.

3. Effect on the result:

High-quality products: New methods and approaches developed through discussion and recommendations lead to improved quality of materials.

Economic efficiency: Economic profit increases by reducing costs and efficiently organizing production processes.

Innovation and competitiveness: Through the introduction of new technologies, competitive products are produced in the market, which increases the ability of companies or manufacturers to compete.

Environmental protection: Approaches to recycling and environmental safety help ensure environmental protection and sustainable development [10].

Conclusion: Currently, special attention is being paid to the production directions of basalt fiber in Uzbekistan. In particular, "Everest" Basalt enterprises were established in Jizzakh region, Basalt and Andijan of Uzbekistan and China.

It is possible to improve production processes, introduce new methods and obtain high-quality products by discussing and developing recommendations for the creation of basalt materials. As a result, it ensures economic efficiency, competitiveness and environmental safety. Such an approach is of great importance not only in scientific, but also in practical fields.

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