Spectrum Journal of Innovation, Reforms and Development
Volume 34, December - 2024 | ISSN (E): 2751-1731
WEBSITE: WWW.SJIRD.JOURNALSPARK.ORG

USE OF BAZALT FABRIC FOR LIGHT FILTERS IN CEMENT MANUFACTURING

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Abstract
Cement production take out industry surroundings atmosphere man-made a pollutant from the fields one is counted. This attitude with this in process into the air coming out dust catch to stay important to the point have In the article Ferghana cement enterprises in the region using vacuum cleaners structures and light methods of formation of basalt fabric in filters and this study according to done experimental affairs result given . Fabric preparation method and order learned them those that are used in practice with related technical and economic reasoning done.

Keywords: Cement industry, dust handles, light filters, weaving technology, fiberglass fabric, basalt fabrics, ecology.

Introduction

Comprehensive measures are being taken in the construction industry of our republic to effectively use energy-saving and resource-saving technologies, apply new innovative construction materials based on local raw materials, and develop new constructive solutions to ensure the reliability of dust gas capture, and certain results are being achieved. In the process of cement production, preparation of raw materials and production of clinker are carried out by wet, mixed and dry methods. The selection of the above methods depends on technological, technical and economic factors, and it is important to take into account the location of the production enterprise and the regional conditions.

Until 2025, it is planned to create a comprehensive environmental protection program and carry out continuous technical modernization. This plan is mainly aimed at reducing waste and increasing the environmental awareness of all participants and the population. Investments in environmental protection (for example, maintenance of filters) are continuous and repeated every year. An example of this can be seen in light filters, which are widely used in dry cement production [1]. Improvement of these filters using basalt fabric remains an urgent issue today.

In the preparation of light filter fabric from roving based on basalt fiber, basalt roving must first be worn. The reason for this is to ensure that the fabric impregnated with basalt wool is fine and not damaged during the regeneration process and that it will last for a long time. Basalt roving is melted from basalt rock at a high temperature. In obtaining a quality basalt roving, the main attention is paid to the chemical composition of the minerals contained in the basalt stone. Because when the basalt stone is free of minerals of different chemical composition, the brittleness of the basalt roving decreases, that is, the modulus of viscosity increases [2].

During our research, the 400-fiber basalt roving developed by JV "Mega Invest Industrial" LLC, located in Forish District, Jizzakh Region, was woven on a modern spinning machine (krutilnyy stonok) in the "Acetate Fibers" workshop of "Azot" JSC. The minimum number of passes and speed of the existing machine is 300 ob.m./sec and above, and breakage occurred due to the low modulus of viscosity of the basalt roving fibers. The reason for this situation was actually the high number of stitches of the sewing machine. For the roving based on basalt fiber, which we recommend, the number of strokes should be at most 50-100 ob.m./sec. In the literature, it was determined that before processing basalt roving, i.e. before grinding, lubrication with various chemical additives is necessary.

It became known that scientists of the Tashkent Light Industry and Textile Institute conducted scientific research on weaving fabric from basalt fiber [3]. Only these scientists were able to weave fabrics from basalt fiber without cutting the fiber. It turned out that this product was originally woven from basalt roving.

Therefore, it is first lubricated in paraffin emulsion, 10-15 twists of 10 cm length are formed, 0.96 m ^{2} fabric is woven with sufficient thread for abri (osnova) and bandi (utok) and woven in the "hand shop" method, as shown in Fig. 1. we went out Basalt roving was lubricated with paraffin emulsion, household soap and mezdra glue to bring it to a tissue state , and it was removed [4].

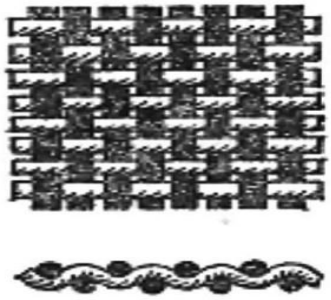

Figure 1. Canvas type of structural fabric

The two basalt rovings that were heard were joined together and heard again.

Figure 2. The process of weaving fabric

Figure 3. Woven fabric look

Using the hand machine shown in Fig. 2, a canvas structural fabric consisting of 2x2 mm gaps was prepared from the blown basalt fiber. Figure 3 shows a basalt cloth woven by the canvas method. The fabric we recommend consists of three layers: - two outer surface layers are made of non-woven fabric (basalt wool) developed by JV in the form of "Basalt Wool" LLC; - the

middle layer consists of a woven fabric with 2x2 mm gaps and serves as a frame. Figure 4 shows the view of the finished three-layer composite fabric.

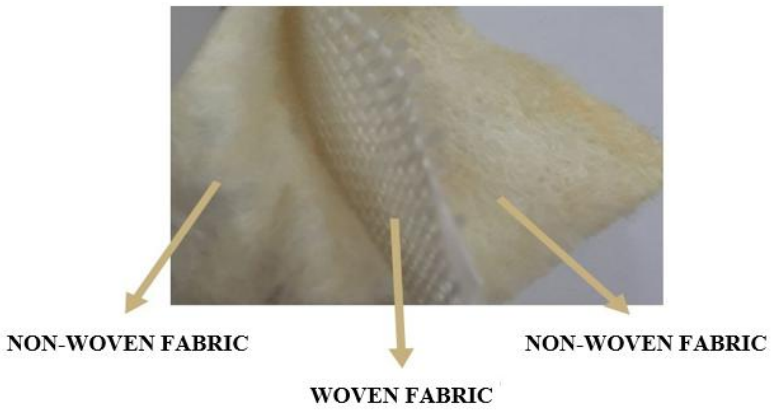

Figure 4. Content view of Engli filter cloth

A filter cloth with a width of 0,96 m ^{2} was prepared for laboratory testing [5]. The prepared fabric was tested using a special device to determine aerodynamics. The results obtained during the test were compared with the most fabrics currently used in the factory, and were also applied to the production process. Below is an industrial view of a narrow filter (Fig. 5).

Today, the light filters used in cement vacuum cleaners and the meshes holding them require improvement. The fact that the fabric of wide filters cannot withstand high temperatures, the flexibility of the frame meshes interferes with filtering, and finally, the import of this fabric from abroad leads to an increase in the cost of this process [6]. Currently, there are 22 cement plants operating in the republic, each of which uses 20-30 thousand m2 of fabric per year for a light filter . The price of 1 m^2 of this fabric is imported to our republic from 10 USD.

Figure 5. Industrial view of the wide filter

Initially, the basalt roving was woven in the FarPI laboratory, woven from it into a fabric in a canvas structure, and basalt wool was felted on both surfaces of this fabric by the method of needle felting to create the fabric for light filters.

2 of fabric made on the basis of basalt fiber is 850 g, of which 640 g is fiber and 210 g is fluff. For this purpose, including raw materials and labor costs, the price of the finished fabric is 45,000 soums. If we take into account that the filter cloth made of local raw materials (basalt fiber and wool) is several times cheaper than the most used fabric (synthetic, lavsan, glass fiber), the effect

is clearly visible. We save 66,000 soums per 1 m ^{2} of filter fabric as a result of replacing the filters . At " Terra Nova Cement" LLC, the need for this material is 7920 m^2, and if this fabric is changed twice in 1 year, the annual need is 15840 m^2 .

As a result, 15840 x 66000 = 950 400 000 soums

So, by replacing the light felt fabric used in the cement production industry with a fabric made on the basis of basalt fiber, we will save 950400000 soums, and it will be the basis for the production of an energy and resource-saving product that replaces imports based on local raw materials. The differences between the basalt cloth mesh recommended for the filter filter and the actual mesh are shown in Table 1 below, based on the results of the research and the information obtained from the performed works.

Table 1

The most fabric	1 m ^{2}, kg	1 m ^{2}, soum	Temperature range, ^{0}C	Dust capture efficiency, %
Basalt fiber	0.850	44 684.1	400	99.5
Fiberglass	0.890	111 710.4	260	94.9

Table 2 shows the technical description of light filters used in "Terra Nova Cement" LLC .

Table 2 Technical description of dust-gas capture devices in the community where the filters are located

T/r	Name of structures	Unit of measurement of indicators	The value of indicators
1.	Type	-	Dry method
2.	Number of modules	piece	3
3.	Filter surface area	m ^{2}	7920
4.	Weight	t	136.5 (of which 6.7 basalt cloth)
5.	The number of sections in the module	piece	56
6.	The number of cells in the section	piece	221
7.	The length of the widest filter frames , L	mm	7000, 3000
8.	Diameter of wide filter frames , d	mm	165,135

In the dissertation work, after studying the properties of local basalt fiber, it is envisaged to clean the air from cement dust. In case of implementation of planned works, heat resistance, resource efficiency and import substitution will be ensured.

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