TYPES OF BASALT FIBERS USED FOR DISPERSING REINFORCEMENT

Gulomiddinov Sarvar Gayratjonovich
Namangan Engineering-Construction and Basic Doctoral Student

Abstract
With the production of fiber reinforced fiber concrete and fibrotemirbeton structures based on fiber, there are many R & D works aimed at ensuring the strength and reliability of buildings and structures. Compressible reinforced concrete made of dispersed reinforced fibrobeton based on Basalt fibers is one of the important tasks to carry out research in areas of increasing the deformability, tightness and strength of the elements.

Keywords: Basalt Fiber, polypropylene fiber, myetallic fiber, concrete.

Introduction

The development of the world construction industry leads to a sharp increase in demand for yenergy-efficient, yekologically clean and high-strength construction structures. In this regard, the use of fibers, the effective use of yenergy-saving technologies and the improvement of existing production processes took a leading place. In countries such as China, India, Australia, Germany, Canada, USA, there is a special mention in strengthening fiber-based construction structures [1,2].

Modern technologies are constantly developing to increase the durability and strength of building materials. In this direction, the method of dispersing reinforcement is widely used, since it significantly increases the strength of concrete and also improves its resistance to cracks. Various fibers are used for dispersing reinforcement, one of which is basalt fibers.

Basalt fibers are characterized by their unique properties and high physical and mechanical performance. These fibers are extracted from the Basalt genus and dissolved at high temperature, which is then brought to the state of the fibers. While basalt fibers are environmentally friendly, long-lasting and corrosion-resistant, concrete mixtures made from them will have a high strength. For this reason, basalt fibers are of great importance in the construction industry.

Main Part

Basalt Fiber. Basalt fibers are the sum of the ridges of a certain length of complyex continuous basalt fibers. Basalt Fiber is obtained from different rocks, such as basalts, basanites, amphibolites, gabrodiabases or mixtures thereof, which are closely related in chemical composition.

The production of basalt fibers is based on obtaining a basalt solution (mixture)in the melting Pyes and its free flow from special devices. The melting temprature is 1450^{o}c. The advantages of basalt fibro for dispensing reinforcement are that it does not stretch under the influence of voltages, in addition to having a high strength, it is resistant to chemical, corrosive and thermic effects of the external environment, temperature and tensile, and also not expensive.

Figure 1. Basalt Fiber

The research and conclusions of well-known laboratories in our country and abroad, basalt fibers (Figure 1) are the basis for saying with full confidence that they can completely change our vision in the field of construction.
Currently, kyeng is used in the production of Byetone for reinforcement of Basalt Fiber building floors and floors, concrete structures, aerated and foam concrete, concrete and asphalt concrete coatings of highways.
Basalt is added in any concrete mixing device (mixer)before adding water to the dry mixture. The fibers are added In Pieces while being mixed into the mixture to allow it to blend well. The fibers are mixed in 90-110 oborots or higher at the mixing equipment. It is necessary to spend 15% more time than usual on the mixing process with the addition of fiber, since the effectiveness of the fiber directly depends on its good dispersion in the mixture.
The results presented in the study of the myechanical properties of basalt fiber-based fibrothymir-concrete can be explained by the difference in size, quantity and technology for the fibers being applied, divided into scattered character. The addition of basalt fibers to the byeton increases the maximum values of deformations in compression and stretching, and at the same time increases the plasticity of material decay.
Despite the benefits of basalt fibers and the positive results obtained during many studies and experiments, kyeng has not been used in the construction of Basalt Fiber fibrobeton. This is explained by the properties of the material, the uncertainty of the results of the study, the technological difficulties in ensuring the uniformity of the distribution of basalt fibers in the volume of concrete, the imperfection of calculation methods, and the insufficient nutrition of regulatory documents.
Polypropylene fibers. Polypropylene fibers are produced on a large scale and are fourth in size behind polyesters, polyamides, and acryls. About 4 million tons of polypropylene fiber are produced annually in the world. Polypropylene fibers were first proposed by US engineers in 1965 to be used as an additive to byeton for the construction of explosion-proof buildings.
Later, polypropylene fiber was further improved and is now used as a short continuous fibrolated material for the production of fiber tyemir byeton, or as a permanent matériel for the production of thin-layer components. In addition, the use of washbasins in construction has increased significantly, since the addition of fibers to concrete improves the elasticity of concrete in stretching, elasticity in bending, stiffness, resistance to enveloping forces.
When applying polypropylene fibrotola, the following properties of concrete are improved:
- the risk of initial cracking is reduced by up to 90% in the case of continued plastic penetration

of concrete, which in turn makes it possible to pour byeton without immersion seams in large areas. By adding polypropylene fiber to the mixture, the water saturation of byeton is regulated during the dehydration process, thereby relieving the internal tension of the concrete;

- increases the resistance and quality of the concrete surface to decay, since during the operation process, the decay of byeton begins from the surface layer as a result of the entry of acid vapors and moisture, which is also present in ordinary air. In a typical byeton, they penetrate to a depth of up to 20 mm. In fibrobeton, the surface layer is much flatter and without dyeyar microcracks, so the permeability of its top layer will be only 2-3 mm, except [47];
- increases the water resistance of concrete by up to 50% due to the decrease in the number of gaps formed from the appearance of water in the process of reinforcement. Therefore, chemicals, water and various additives are absorbed in much smaller quantities;
- increases resistance to enveloping effects, increases the plasticity of fiber concrete, increases its impact resistance and division resistance (except for reinforced concrete). When cracks form in the hardened mixture, the fibers stretch and the resulting large amount of energy is absorbed by the concrete;
- the frost resistance of concrete is ingratiated by 35%. When fiber is used, channels filled with fibers are formed along with a small amount of air entering the concrete. This allows the fibers and micro-bubbles of air to expand and contract the water during the freezing and melting process, and prevents the concrete from breaking.

Polypropylene fiber does not rub and spreads quickly when mixed into dry cement mixtures and mixtures, which does not cause garden excess problems with its mixing and uniform distribution over the entire mass of concrete.

Polypropylene fibers are very elegant and flexible, and although they are visible in concrete at the mixing stage, they are not visible at all on the surface of products made later from fibrobeton. In a concrete mixture, polypropylene fibers mix in any type of mixer, not to mention the fact that the fibers are unevenly distributed or tangled.

Polypropylene fibers are thiermo plastic produced from propylene gas. For efficient operation, the recommended amount of polypropylene fibers is 0.9 kg / m3, compared to 0.1% in buhajm.

Myetall fibers. For the first time, reinforcement of concrete ispyers with metal wire fibers was carried out in 1907 by V.P.The first conclusions were drawn based on the experimental studies proposed and conducted by Nyekrasov, including:

-with an increase in the sample size, the homogeneous distribution of fibers increases;
- an increase in the distance from the moment the first crack appears to the complete breakdown of the fibrobeton sample is observed;
- the strength of fibrobeton to compression increases with a decrease in the diameter of the fibers and an increase in their length and volume;

The addition of metal fibers to the concrete matrix, according to various studies, improves the following myechanical properties

- strength to stretch 2-3 times;
- compressive strength 1.1 - 2 times;
- impact resistance 2-10 times;
- stretch in bending strength 2.5 - 4 times;
- tensile strength 1.5 - 2 times;

- twist strength 2.5 times;
- the initial elasticity modulus increases to 30%.

In addition, the joining of metal fibers to concrete helps to increase the strength, freezing resistance, carriage resistance, fire resistance, explosive effects and other properties.

The disadvantage of metal fiber concrete is that the fibers may not be evenly distributed over the concrete. There may also be a risk of fiber build-up during the mixing process. Another disadvantage to note is that fiber iron is heavier than non-byeton fiber concrete. There is also a risk of cirrhosis. Fiber reinforced concrete will be more expensive than regular byeton.

Conclusion

In the conditions of the Republic of Uzbekistan, it is shown that very little scientific work is devoted to the experimental, theoretical study and research of the work of fiber-concrete structures based on fibers. Therefore, it is an urgent issue to study the physical and mechanical properties of fiber-reinforced concrete based on fibers produced in our country, to take into account the local conditions in the calculation and design of fiber-reinforced concrete structures.

REFERENCES

1. Ageev D.N., Krasnovsky R.O., Pochtovik G.Ya., O normirovanii prochnostn y x i deformativn y x characteristic constructivn y x keramzitobetonov (Beton i jelezobeton - 1962. - No. 1. - S. 17- 21).

2. Aleksandrovsky S.V. Three temperature- humidity parameters y x automatic price lattice concrete y x i reinforced concrete y x construction
(Edited by A.A. Gvozdeva . - M.: Stroyizdat , 1964- S.47-61).

3. Askarov B. A., Mirzaev P. T. Vliyanie regime dlitelnogo nagruzheniya na prochnost, jestkost, tre shch inostoykost prednapryajenn y x sborno- monolithic y x keramzitobetonn y x balok. (Sbornik nauchn y x trudov TashPI. V y p. 286 Tashkent 1979. S 37-44

4. Askarov B.A. Khodjaev A.A. Iron concrete and column y iz lekoko betona na osnobe lessovidn y x sulinkov armirovann y x v y sokoprochnoy styu. Architecture and construction in Uzbekistan. 1990g #5. S 32-34

5.Askarov B.A., Mailyan D.R., Khasanov S.S. Mekhanicheskie svoystva betonov posle predvaritelnogo objatiya v usloviyakh suhogo jarkogo klimata .- Tashkent.: TashPI , 1985. - P.42-45.

6. Askarov B.A., Rakhimov B.Kh., Nuritdinov H.N. Ucht mestn y x najeniy betonov na graviepodobnom zapolnitele v usloviyax xhogo hot climate pri raschete na prochnost jezobetonn y x structural prednznachenn y x dlya expletatsii v usloviyax xhogo hot climate. - Tashkent: TashPI, 1985. - P.90-92.

7. Ashrabov A.B., Narzullaev F.N. Narastanie prochnosti ob y chnogo i keramzitnogo betona v mestn y x usloviyax Uzbekistana. Trud y SAZPI, V y p. 11. - Tashkent, 1959. - S. 57-64.

8. Ashrabov A.A. Issledovanie vliyaniya temperaturno-vlajnostnogo regime sred y na polzuchest i usadku betona, Avtoref .d iss ... kand.tekhn.nauk .-Tashkent, 1970. 26 p.

9. Berg O. Ya. Fizicheskie osnovo ' teorii prochnosti betona i jelezobetona. - M.: Gosstroyizdat, 1961. 96 p.

10. Berg O.Ya., Shch erbakov E.N., Pisanko G.N. V y sokoprochn y y concrete. - M.: Stroyizdat, 1971. 201 p.