NEW INNOVATIVE IDEAS IN THE FIELD OF PRODUCTION OF REINFORCED CONCRETE STRUCTURES.

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In many developed countries, instead of steel reinforcement in reinforced concrete, composite reinforcement is being used. The reason for this is that metal fittings cannot be used in aggressive environments. This material, composite reinforcement, is made using the latest achievements in chemistry and materials science, because it has unique properties. Composite fittings do not rot or rust under the influince of moisture.

Its mass is 5 times lower compared to steel wire reinforcement with the same strength. Composite reinforcement is resistant to heat and cold and can keep its properties well in the temperature range from -70 0C to 1000C. Today, the technology of manufacturing fittings from composite materials has improved and become cheaper, so the pace of transition to non-metallic fittings has also accelerated. The following types of composite fittings are distinguished:

1. Glass-plastic fittings (removable on the basis of glass fiber and resin).
2. Basalt-plastic reinforcement (based on basalt fiber and resin).
3. Glass-reinforced polyethylene terephthalate reinforcement (made on the basis of glass fiber and thermoplastic polymer).
4. Carbon-plastic fittings (from carbon fibers).

The first two types of composite fittings are used more in practice. Features of basalt reinforcement Non-metallic composite basalt reinforcement is made of basalt fibers and resin. Advantages: The main advantage is the low level of heat transfer directly related high heat and fire resistance.

Basalt plastic reinforcement is characterized by high tensile properties. Compared to conventional steel reinforcement, these numbers are almost 3 times higher than the

strength limit. The corrosion resistance level of composite basalt grill is almost the same as that of stainless steel. In addition, corrosion resistance is observed when interacting with an aggressive environment. This is especially true for chloride salts, sulfur and hydrochloric acid, and nitrogen oxides. These qualities significantly extend the cycle of perfect repair of the object compared to traditional reinforced concrete structures.

The clear advantages of the material include resistance to significant temperature differences: from -70 to +100 degrees, as well as low weight - 5 times lighter than steel.

This type of armature does not conduct electricity at all, that is, it is a perfect dielectric.

The absolute immobility of basalt plastic to the effects of electromagnetic radiation makes it indispensable in the construction of medical institutions, airports and radar stations, which are very sensitive to electromagnetic radiation equipment. All these features of composite basalt-plastic reinforcement

it has high tension and deformation properties, and also ensures strong adhesion to concrete, allowing wide use of polymer basalt reinforcement in the construction of marine and port construction, highways, foundations, heat-saving closed structures, power transmission lines.

Disadvantages: One of the main disadvantages of basalt fittings, which prevents its widespread use, is of course its price. It has been proven in practice that the price of composite fittings made of basalt and plastic is several times higher than the price of fittings made of metal or fiberglass.

Production of glass fiber composite reinforcements. For the production of composite reinforcements, epoxy resin and fiberglass, which form a bunch of glass fibers, are used. The production of composite reinforcement consists of several stages. First, epoxy compound is applied to the glass fibers. Then the strands of resin-soaked glass rovings are passed through a funnel known as a filler, which is heated to a certain temperature, and polymerized.

This process of polymerization in scientific language is pultrusion (English "pull" - tortmok and "through" - orkali, from between) is called.

At the pultrusion stage, the surface of the desired diameter is smooth; khivich is formed. The surface of the reinforcement should have a ribbed surface for good engagement with concrete. Therefore, in order to create such a surface, at the first stage, the zagatovka is rolled through valets with ripple marks.

In the method of forming a periodic profile on the surface of the fittings, a small-diameter glass rod coated with epoxy resin is twisted spirally and polymerized as described above.

is increased.

Composite fittings are marked as follows:
ASK - glass-composite based on glass fibers (glass plastic) fittings;
ABK - basalt-composite based on basalt fibers (basalt plastic) fittings;
AUK - composite reinforcement based on carbon fibers;
AAK - aramid composite reinforcement based on aramid fibers;
KK - combined based on the fibers listed above composite fittings.
Tensile strength is that of AIII class steel reinforcement
3 times higher. Durability of metal fittings
indicator - 390 MPa, and that of composite reinforcement is not less than 1000 MPa.
Composite fittings do not rust or corrode.
• Acid resistant. Resistant to sea water.
• Does not conduct electricity. Dielectric.
•Composite fittings practically do not conduct heat.
• Does not resist radio waves.
Disadvantages: The fire resistance of fiberglass reinforcement is relatively small, as its main disadvantage.
is considered. However, the burning of its material has a fading character and it belongs to group G-1 of flammability. Inside the reinforced concrete body, its limit flammability does not exceed 200˚C. it is not used in reinforced concrete structures exposed to high temperatures. The areas of use of composite fittings are quite wide:
1. Industrial and civil construction: in the construction of housing, public, industrial buildings.
2. In low-rise housing construction.
3. In road construction.
Advantages of composite fittings:
1. Low price. Much cheaper than metal fittings.
2. Lightness. It is 5-10 times cheaper than steel fittings
3. High durability. The strength limit of metal fittings is 400 MPa, that of glass-plastic fittings is 1100 MPa
4. Corrosion resistance.
5. Low thermal conductivity.
6. Convenience of transportation.
7. Non-crack formation in reinforced concrete.
8. Having dielectric properties.

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