



Some Aspects of the Technology of Continuous Formulation of Reinforced Concrete Products

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Abstract: The article is devoted to one of the most promising technologies for formworkless molding of reinforced concrete products.

Keywords: concrete, reinforced concrete products, formless formation, rigid and extra rigid concrete mixes.

In the world practice of production of building materials, methods of continuous formless molding of concrete and reinforced concrete products and structures are recognized as meeting the current level of development of engineering and technology, capable of competing with traditional manufacturing methods due to a significant degree of automation of technological processes, low metal consumption of production, the possibility of producing a wide range of products with minimal labor and material costs[1-5].

The world practice for the production of concrete and reinforced concrete structures by the formless molding method shows that its implementation requires high-quality concrete mixes with a set of predetermined properties that must be constantly monitored both during the manufacturing process and at the molding stage. However, this technology has not yet found wide distribution and is constrained by a number of reasons, one of which is the violation of the homogeneity of freshly molded products as a result of external mechanical influences, associated with the need to give the product or structure the desired shape, the lack of a method for conducting an express analysis to determine the viscous-flowing state of the concrete mixture. The lack of systematic control of this indicator leads to the fact that the concrete mix, which is not able to resist significant loads, is deformed, and the product acquires unwanted defects and cracks even before the start of hardening [6-9].

In Uzbekistan, most enterprises of the construction industry use various variants of the cassette aggregate-flow technology for the manufacture of reinforced concrete products using cast concrete mixes with $W/C \geq 0.4$. Such technologies are multi-stage, labor-intensive. Due to the use of a large amount of manual labor at all stages of production, productivity is low, the quality of products is not high and, most importantly, in these outdated technologies, it is necessary to have a large number of shaping bead equipment for each type of product size [10].

Modern technologies for the production of reinforced concrete products are based on the use of rigid and extra rigid concrete mixes with W/C 0.25-0.35. Such mixtures are characterized, firstly, by the fact that the shear stress in them is greater than the specific gravity in the static state. As a



result, they do not spread under their own weight and retain their shape without rigging. Secondly, rigid or especially rigid concrete mixtures are capable of thixotropic liquefaction when an external force is applied. After turning off the external exciter, the molded product loses its mobility and retains the given shape on its own.

The performed studies have proved that the most effective way to obtain concrete with predetermined properties is to use not only chemical modifiers, but also highly active mineral fillers. The use of such a complex of additives makes it possible to purposefully create favorable conditions for the formation of a concrete mixture of the required viscosity and fluidity, which is a necessary condition for molding products using this technology. To date, the use of complex highly active additives based on chemical modifiers and mineral fillers is the most affordable and easiest way to obtain concrete with improved physical, mechanical and performance characteristics. However, the issues of selecting the composition of complex-modified concretes in relation to the technology of formworkless molding and quality control of the concrete mixture at the molding stage remain unexplored and not fully resolved.

A concrete mixture with a complex modifier for the production of reinforced concrete products by the method of formless molding has been proposed [10]. The developed composition meets the requirements of the formworkless molding technology and provides a moderate consumption of the binder and the production of defect-free products with predetermined properties.

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