

**PRODUCT QUALITY CONTROL. STANDARDIZATION.
ORGANIZATION OF PRODUCTION**

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CONCRETE STRENGTH SET MODEL

The paper presents a mathematical model of concrete strength gain. The model takes into account the initial moment of concrete setting. It is shown that with an increase in temperature, the setting time of concrete shifts towards shorter times. Three characteristic points of the concrete strength gain curve were obtained, which make it possible to qualitatively describe the initial process of concrete hardening.

Keywords: concrete mix, concrete, concrete hardening, strength, building structures, durability, physical deterioration

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TESTING HOLLOW CERAMIC BRICKS FOR BENDING STRENGTH

The question of the expediency of making changes to GOST 8462-85 in terms of calculating the compressive and bending strength of ceramic hollow bricks is considered. A scheme for testing a fragment of masonry for bending is proposed, which allows a more objective assessment of its strength characteristics.

Keywords: masonry, hollow ceramic brick, bending strength, moment of resistance, compressive strength

MACHINES, AGGREGATES AND TECHNOLOGICAL PROCESSES

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RESEARCH OF RELAXATION AND CREEP OF POLYMER TEXTILE MATERIALS
TAKING INTO ACCOUNT THE CHOICE OF THE OPTIMAL MODEL

The study of the relaxation and creep of polymeric textile materials is of great importance, both from the scientific research and from the practical point of view, and allows one to give recommendations on the creation of new promising materials with specified deformation properties. The article proposes a method for choosing the optimal model for the specified modeling and several possible options.

Keywords: mathematical modeling, optimization criteria, polymer materials, deformation properties, relaxation, creep

SYSTEM ANALYSIS, CONTROL AND INFORMATION PROCESSING

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SYSTEM ANALYSIS OF ELASTIC, VISCOELASTIC AND PLASTIC DEFORMATION
COMPONENTS OF POLYMER TEXTILE MATERIALS

The article discusses methods for system analysis of elastic, viscoelastic and plastic components of deformation of polymer textile materials based on their mathematical modeling and computer prediction. The division of the total deformation of polymeric textile materials into components makes it possible to solve the problem of assessing their functional properties.

Keywords: system analysis, mathematical modeling, forecasting, polymer textile materials, elasticity, viscoelasticity, plasticity, deformation

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DEVELOPMENT OF METHODS FOR MATHEMATICAL MODELING AND SYSTEM
ANALYSIS OF DEFORMATION PROPERTIES OF POLYMER TEXTILE THREADS

A variant of mathematical modeling and system analysis of the deformation properties of polymer textile yarns is proposed, taking into account which the forecasting of operational processes of varying complexity is carried out - from simple relaxation and simple creep processes to complex deformation-recovery processes and reverse relaxation processes with alternating loads.

Keywords: mathematical modeling, systems analysis, polymer textile materials, deformation properties, relaxation, creep

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TO THE QUESTION OF THE RELEVANCE OF INCREASING THE EFFICIENCY OF THE USE OF ENERGY RESOURCES IN THE TEXTILE AND LIGHT INDUSTRIES

The article discusses the relevance of increasing the energy efficiency of enterprises in the textile and light industry. It is shown that as the role of automation of production processes increases, the cost of fuel and energy resources in the cost of manufactured products will increase. In this regard, the rational use of energy resources at industrial enterprises will help to reduce production costs and production costs, and increase its competitiveness both in the domestic and foreign markets. The main legislative acts governing the mechanisms of energy saving and energy efficiency increase in force in the territory of the Russian Federation are considered.

Keywords: textile and light industry, industrial enterprise, consumption of energy resources, production cost, energy saving, energy efficiency

TECHNOLOGY AND PROCESSING OF SYNTHETIC AND NATURAL POLYMERS AND COMPOSITES

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A. S. Chornous, C. I. Sharapova, L. A. Schevelkova, A. A. Shcherbakova

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TECHNOLOGY AND DESIGN OF PAPER PRODUCTS BY CASTING IN MOLDS

The article is devoted to the actual problem of using secondary raw materials (waste paper) to obtain products. The work uses 3D printing technology to produce injection mold parts. Pre-created 3D shapes of the body, piston and removable bottom with perforation. Then the 3D models were converted into a ".stl" file, which was encoded and used to make a sample on a 3D printer. The pulp was prepared according to the standards and then filled into the manufactured form. The result of the work was a product of a simple form made of waste paper and chemical additives.

Keywords: cast containers, waste paper, fibrous suspension, molding, 3D printing

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DETERMINATION OF PARAMETERS OF WET STRENGTH WOOD PILLETS PRODUCTION

The article is devoted to solving the problem of complex wood processing, which is relevant for pulp and paper and woodworking industries. The object of the study is the process of obtaining wood pillets. The main result is the identification of different technological modes for the preparation of wood pillets. Data on optimum humidity, pressure and compaction time of pine wood sawdust are obtained. For this purpose, wood pillets with a different size fraction of wood material were obtained. Then the main indices of the wood material pressing process and storage conditions are established.

Keywords: wood pillets, pressure, holding time, moisture

TECHNOLOGY OF PRODUCTION OF TEXTILE AND LIGHT INDUSTRY PRODUCTS

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MATHEMATICAL MODELING OF RELAXATION AND CREEP OF POLYMER TEXTILE

MATERIALS

The article discusses the mathematical modeling of relaxation and creep of polymeric textile materials - the main operational processes of these materials. On the basis of mathematical modeling of relaxation and creep of polymeric textile materials, numerical prediction of their operational processes is carried out in the future.

Keywords: mathematical modeling, forecasting, relaxation, creep, polymer textile materials

A. A. Kozlov

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NUMERICAL PREDICTION OF RELAXATION AND CREEP OF POLYMER TEXTILE MATERIALS

Methods for the numerical prediction of relaxation and creep of polymeric textile materials based on mathematical modeling of these processes are considered. The specified forecasting makes it possible to solve the problem of systematic analysis of the properties of materials, as well as to investigate the relationship between the properties of materials and their structure.

Keywords: numerical prediction, mathematical modeling, polymer materials, relaxation, creep