

PRODUCT QUALITY CONTROL. STANDARDIZATION. ORGANIZATION OF PRODUCTION

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METHODS OF CONTROL AND IMPROVING THE QUALITY OF MATERIALS IN THE TEXTILE AND LIGHT INDUSTRY

The article discusses the issues of quality control of functional properties and improving the quality of materials in the textile and light industry, which are supposed to be carried out on the basis of mathematical modeling and system analysis of these properties.

Keywords: polymer textile materials, quality control, mathematical modeling, system analysis, increasing the competitiveness of products

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DEVELOPMENT OF METHODS TO INCREASE COMPETITIVENESS OF TEXTILE AND LIGHT INDUSTRY PRODUCTS

The developed methods of increasing the competitiveness of textile and light industry products are based on the idea of introducing modern information technologies, which is especially important for the development of the Russian economy during the period of ongoing international sanctions. The solution of the tasks set will make it possible to accelerate both the comprehensive dynamic development of the textile and light industry of the country as a whole, and to carry out the fastest transition to import substitution of manufactured products.

Keywords: quality management, quality management, information technology, efficiency improvement, textile and light industry, textile materials

MACHINES, AGGREGATES AND TECHNOLOGICAL PROCESSES

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METHODS FOR MATHEMATICAL MODELING OF DEFORMATION PROCESSES OF ARAMIDE TEXTILE MATERIALS

Mathematical modeling of the deformation processes of aramid materials used as rescue equipment in case of fires makes it possible to carry out both a comparative analysis of these materials according to serviceability criteria, and to select these materials that most suit the set goal - saving people in case of fires.

Keywords: aramid materials, mine rescue equipment, fire rescue equipment, viscoelasticity, deformation, mathematical modeling, numerical prediction

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COMPUTER SIMULATION OF FUNCTIONAL PROCESSES OF POLYMER TEXTILE MATERIALS

Based on the methods of system analysis of the viscoelastic properties of polymeric textile materials, analytical and computer methods for predicting functional processes are being developed. The choice of the analytical version of the normalized relaxation function and the creep function is based on the optimality criterion of the mathematical model of viscoelasticity.

Keywords: polymers, textile materials, viscoelasticity, functional processes, mathematical modeling, relaxation, computer prediction

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METHODS FOR STUDYING THE PHYSICAL AND MECHANICAL PROPERTIES OF ARAMIDE TEXTILE MATERIALS

The article discusses methods for studying the physical and mechanical properties of aramid textile materials. Comparative analysis of the viscoelastic characteristics of aramid textile materials and the threads forming them clarifies the internal nature of the relaxation and creep of aramid fabrics and cords - deformation primarily occurs due to conformational and structural rearrangements of a geometric nature, and a change in the geometric structure of aramid fabrics and cords significantly affects the redistribution of elastic and viscoelastic-plastic properties and is the basis for solving technological problems of design and selection of materials with specified elastic and viscoelastic-plastic properties

Keywords: aramid materials, viscoelasticity, deformation, mathematical modeling, computer prediction, relaxation, creep, shrinkage

SYSTEM ANALYSIS, CONTROL AND INFORMATION PROCESSING

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STUDY OF DEFORMATION AND RELAXATION PROPERTIES OF POLYMER TEXTILE MATERIALS BY METHODS OF SYSTEM ANALYSIS

Methods for studying the deformation and relaxation properties of polymer threads are transferred to textile materials. Analytical and computer methods for the system analysis of their viscoelastic properties are being developed. An analytical version of the normalized relaxation function and the creep function, which is most suitable for the study of these materials, is proposed.

Keywords: polymers, textile materials, viscoelasticity, deformation processes, mathematical modeling, system analysis, relaxation, computer forecasting.

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METHODS OF SYSTEM ANALYSIS OF PHYSICAL AND MECHANICAL PROPERTIES OF ARAMIDE TEXTILE MATERIALS

The article deals with the issues of system analysis of the physical and mechanical properties of aramid test materials used to save people in mines. Aramid textiles have increased strength and good resistance to high temperatures. Based on a comparative analysis, it is possible to select the specified materials according to operational and functional characteristics.

Keywords: aramid materials, mine rescue equipment, viscoelasticity, deformation, mathematical modeling, numerical forecasting, system analysis

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CONDUCTING A SYSTEM ANALYSIS OF THE FUNCTIONAL PROPERTIES OF FIRE RESISTANT TEXTILE MATERIALS

The article discusses the issues of system analysis of the deformation properties of textile aramid cords used in rescuing people in case of fires. These materials have both increased

strength and high resistance to temperature effects. A systematic analysis of the deformation properties of aramid cords is carried out on the basis of mathematical modeling of relaxation and creep processes, as well as using computational technologies.

Keywords: aramid materials, fire rescue equipment, viscoelasticity, deformation, mathematical modeling, numerical prediction

TECHNOLOGY OF PRODUCTION OF TEXTILE AND LIGHT INDUSTRY PRODUCTS

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DEVELOPMENT OF CRITERIA FOR SELECTING THE OPTIMAL MATHEMATICAL MODEL OF VISCOUS ELASTICITY OF POLYMER TEXTILE MATERIALS

The article discusses the criteria for choosing the optimal mathematical model of the viscoelasticity of polymeric textile materials. The results of forecasting the deformation and relaxation processes of these materials essentially depend on the successful choice of the indicated mathematical model.

Keywords: mathematical modeling, optimality criteria, polymer textile materials, deformation processes, relaxation, creep

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DEVELOPMENT OF METHODS FOR DETERMINING RELAXATION AND DEFORMATION CHARACTERISTICS OF POLYMER TEXTILE MATERIALS

The article is devoted to the development of methods for determining the relaxation and deformation characteristics of polymeric textile materials, which are parameters of the corresponding mathematical models of relaxation and creep of these materials.

Keywords: relaxation, creep, viscoelastic characteristics, polymer textile materials, mathematical modeling

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