IMPROVEMENT OF COMPOSITE POLYMER COATINGS PRODUCTIVITY

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Annotation: this article provides information on the methods of research to improve the properties of composite polymer coating and materials

Keywords: polymer,deformation, thermodynamic, resonance, acceptor. physical and mechanical properties of positional polymer materials.

Composite materials are used in aviation, Cosmonautics, rocket engineering, automotive industry, mechanical engineering, mining and ore industry, construction, chemical industry, textile, agriculture, household appliances, radio engineering, energy, pipe manufacturing and other industries.

Physical and mechanical properties of composite polymer materials. The difference between polymers from ordinary substances is primarily that they have a specific mechanical property. Ordinary solid bodies are rigid and have a slight reversible deformation, while liquid bodies, on the contrary, do not become solid and have irreversible deformation. Polymers show the properties of solid and liquid bodies in themselves. They are solid and have a certain volume and shape, and have an irreversible deformation characteristic of a liquid. Polymers are able to form a fiber and a veil with an optical anisatrop property. The melting of polymers and the properties of their solutions differ from that of ordinary substances.

When polymers dissolve, a bokish phenomenon (melting of a low molecular fluid in a polymer) occurs, which is not characteristic of low molecular substances. Polymer solution viscosity is very many times greater than that of ordinary low molecular substance solution viscosity. The thermodynamic property of a polymer solution is fundamentally different from solutions of a low molecular substance, especially osmotic pressure and the amount of solvent vapor pressures above the solution. Based on these physical properties, polymers are allocated to a separate group of substances. The question arises as to whether the above-mentioned

properties of high molecular compounds depend on their structure. This question can be answered by the fact that, based on the organised properties of polymers to this day, they have a characteristic of mechanical properties and their solutions are due to the chain structure of polymer molecules. Based on the examination of polymerization and polycondensation processes, the study of the physical properties of polymers and their solutions, the idea arises that a polymer molecule has a linear structure. And in recent times, with the help of electron microscopes, the possibility of direct examination of such large macromolecules has been created.

So many factors have been found that prove that the polymer macromolecule has a linear structure. It should be taken into account that the polymer molecule is in constant contact with the environment. Therefore, when expressing a polymer, it is not enough just to know its molecule structure, in which the macromolecular force is much weaker in the effect of the condalang covalent bond in the molecule. The chain structure of the polymer is lost as a result of an increase in the strength of intermolecular action (the formation of a large number of bonds between macromalecules), and the entire complex property inherent in polymers is lost. Therefore, first of all, let's look at the linear chain molecule of a polymer and how it differs from small molecules. Here we talk about the viscosity of the macromolecule, which allows the polymer properties to be explained by fiber. The role of composite polymer materials in Mechanical Engineering. All processes associated with the processing of polymer materials and their use lead to a change in the structure and properties of polymers. Such processes age polymers. In a polymer under mechanical action, the internal forces do not spread evenly, they are found in certain areas of the polymer chain, breaking off chemical bonds. As a result of the interruption of chemical bonds, macroradikals are formed. The formation of macroradials as a result of mechanical destructions is proved by paramagnetic resonance, polymerization of monomers in polymer mechanocreking by the interaction of free radicals with acceptor substances. In the mechanical - chemical destruction of polymers, free radicals are formed. This process is also a chain process and consists of three stages. At the first stage, active centers are formed. In the second stage, the reclining chain hangs. In the third stage, the reaction chain is broken. As a result of mechanical impact,the average polymerization rate of the polymer is reduced, the solubility of the polymer is increased due to the interruption of some of the intermolecular bonds, the plasticity of elastomers changes, the

conformation of the macromolecule changes, the durability is reduced, new functional gruppas are formed. Changes that occur as a result of mechanical destructions are practically used for various purposes. Making polymers heat-resistant is one of the important tasks of polymer chemistry and technology. The most resistant to high temperatures from carbon dioxide polymers is fluoroplast, which tolerates temperatures of 3000 C for a long time. Polymers with an aromatic core in their composition are also heat-resistant. The heat resistance of polymers depends on the chemical structure of the polymer, the speed of thermal decomposition.

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