

Physico-chemical nanomaterials science

Features of structurization of the SEBS welded joints formed by chemical and physical welding methods

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A problem of joining of two plastics can be solved in different ways, the choice of which is determined by the chemical nature of materials, structural features of the product and some other factors. Welding is one of the mostly productive methods that has several important advantages, such as efficiency, saving of material and high strength of welded joints. Welding of plastics is carried out using internal or external heat sources, chemical method or different combinations of these methods.

Chemical welding is usually used for joining of thermoset polymeric materials. Necessary conditions for chemical welding of two plastics have to ensure close contact between them and their common weldability.

The aim of the present work was the estimation of the welded joints quality of styrene ethylene butadiene styrene (SEBS is modern polymer that is widely used for medical applications), which were obtained by chemical welding, and their comparison with the SEBS welded joints obtained by physical methods of welding (heated tool welding, hot gas welding etc).

The evaluation criteria of the welded joints quality were their mechanical strength, changes in structure and some physico-chemical properties comparing to pure SEBS. The quality of the welds was evaluated according to these criteria by mechanical tests, electron microscopy, X-ray and thermal analysis.