

ANALYSIS OF WATER SORPTION OF FILMS BASED ON MODIFIED STARCH

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The material based on PVA with the addition of natural polymers and medical preparations will have a prolonged effect, it is easy to adjust their elastic properties; active substances are well released and eliminated from them. This opens up prospects for obtaining biocompatible films with antiseptic and fungicidal properties. The influence of citric acid concentration (1 mol/l and 0,5 mol/l) and treatment time (1,5; 2,0; 2,5 hours) on the process of starch modification was studied. Samples of corn starch were treated with acid and kept in a drying cabinet at a temperature of 60 °C. Six samples were prepared - 3 samples with a concentration of 1 mol/l and 3 samples with a concentration of 0,5 mol/l. The solutions were prepared according to the following composition – 30 g of starch, 165 ml of distilled water, and citric acid with a concentration of 1 or 0,5 mol/l. Study of physical and mechanical properties depending on the moisture content of the samples, water vapor sorption and fungal resistance of the films was carried out.

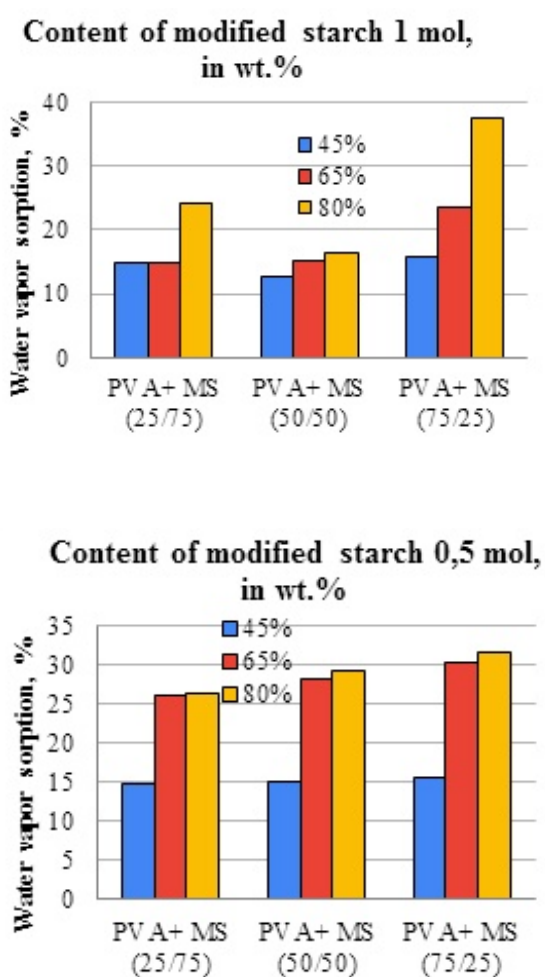


Fig. 1. Influence of starch modification conditions on sorption properties of films based on starch

It was observed that at 45% and 60% moisture for films based on starch, the sorption of water vapor increases to 5%. As the starch content increases at a humidity of 80%, sorption decreases. It can be assumed that the change in physical and mechanical properties occurs as a result of the formation of a structural network between carboxyl groups in modified starch and PVA macromolecules. Films based on modified starch are more homogeneous and transparent.

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