MODIFICATION OF SECONDARY POLYETHYLENE IN ITS REPROCESSING AND MAKING OF COMPOSITION MATERIAL ON ITS BASIS

Samir GULIEV, Gabil SHARIFOV, Aiaz EFENDIEV

Institute of Polymer Materials of Azerbaijan Academy of Sciences, S.Vurgun Str.124, Sumgait 373204

Development in the field of production of plastics leads to pollution of environment by their wastes. Methods of utilization of these wastes by means of their burning was previously acceptable. At present the most economical is the use of wastes by means of their repeat processing. However owing to availability of oxidized fragments in the composition of treated and unsaturated centers is impossible to use their as initial raw materials for production of goods since these materials have been subjected to accelerated aging. Therefore for creation of homogeneous material on structure we have realized the modification of polyethylene being in use, containing unsaturated centers in its composition and carbonyl groups in its treatment process in the presence of sodium salt of trichloroacetic acid. As a result of thermolysis of latter formed in conditions of processing dichlorocarbene reacts both with double bonds and C-H -bonds by adjacent carbonyl groups:

\[
\text{CCl}_3\text{COONa} \xrightarrow{\Delta} \text{CCl}_2 + \text{NaCl} + \text{CO}_2
\]

\[
\begin{array}{c}
\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2 \ldots \text{CH}-\text{C}-\text{CH}_2 \ldots \overset{2\text{CCl}_2}{\longrightarrow} \\
\text{H} \quad \text{O}
\end{array}
\]

\[
\begin{array}{c}
\text{CH}_2-\text{CH}-\text{CH}_2 \ldots \text{CH} - \text{C}-\text{CH}_2 \ldots \\
\text{Cl} \quad \text{Cl}
\end{array}
\]

Modification realized in such a way leads to decrease of its heat-stability and adhesion capacity and also stability to aging. On the basis of modified polyethylene and PVC the composition materials were made. In this case bentonite plasticized by polyesters being waste of production of Sumgait plant "Orgsintez" was used as filler. Benzene peroxide was used for cross-linking of interphase layers. The results of investigation have showed that in such treatment of composition consisting of modified secondary polyethylene, PVC and bentonite dressed by polyesters with addition of initiator is essentially changed an interaction character of filler with polymer matrices.

It has been established that an introduction of chlorine atoms in composition of secondary polyethylene by means of its modification with sodium salt of trichloroacetic acid leads to improvement of its compatibility with PVC. The materials prepared on the basis of developed composition are characterized with more high physical-mechanical indices, improved heat-stability and as more expressed hardness.