MODIFICATION OF SOME INDUSTRIAL POLYMERS WITH HIGH MOLECULAR WEIGHT PHOSPHORUS COMPOUNDS

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Low molecular weight compounds containing nitrogen, phosphorus and sulphur are used as modifiers, stabilizers and antipirens for polymers. However, these low molecular weight additives do not mix well with polymers, and especially in the presence of water can migrate and exude from the material with toxic effects.

For this reason, it is interesting to use as modifiers polymeric products which are based on the reaction methacryloyl chloride (MAC) with triphenylphosphine (TPP).

The synthesized phosphonium polymer was added (in quantity up to 5 mass parts) in composition of polyvinilchloride (PVC), polymetilmetacrilate (PMMA) and epoxide tar ED-20. The samples of PVC and PMMA were obtained by hot pressing method after they were carefully mixed on rotor mixer and samples from epoxide tar were received by cold hardening method with polyethylenepolyamine.

The termooxidial destruction of PVC and PMMA was studied by differential-thermal analysis method on Paulik-Paulik-Erdy system deryvatograph with heating speed 5% min. For analysis data, the beginning of destruction of PVC and PMMA, which were stabilized with phosphonium polymer is shifted in region of the more high temperatures in comparison with samples which were stabilized with stearat of calcium and with the mixture of stearat of calcium and triphenylphosphine. The study is shown that in 523 K the rate of thermodestruction of stabilized up to 5 mass parts with polymer additive of PVC is equal 0,94 % /min, while the such feature of PVC stabilized by low molecular stabilizers in the same temperature is distinguished up to 1,72 and 3,25 % /min. This sharp decreasing of mass losing is explained it seems with uniform distribution of high molecular stabilizer along all lenght of polimer chain and also that macromolecular nature of one hampered its migration on surface material.

Thus, results of researchers, which were held show that synthesized phosphonium polymer on the base of MAC and TPP is effective thermostabilizer, antipiren modifier of and features for some industrial polymers.