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## INVESTIGATING EFFECTS OF PRODEGRADANT CONTENT ON SELECTED PROPERTIES OF POLYMER COMPOSITE MATERIALS

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### Abstract

This paper introduces basic information on the biodegradation of polymers as well as the mechanisms of degradation and factors influencing this process. This paper describes prodegradant additives that induce decomposition of polymers to biodegradable compounds with regard to additives causing oxo-biodegradation. Based on the results of experiments conducted for molded pieces made of polypropylene and extrudates made of low density polyethylene with a d2w prodegradant additive, dependences between prodegradant content and selected properties of the polymer composite, such as tensile strength, hardness and density, were determined. As for polypropylene, a higher content of the oxo-biodegradable compound caused an insignificant decrease in its tensile strength (by approx. 2.5%), while its relative elongation at break increased by approx. 5.7%. However, the hardness and density of polypropylene did not practically change (changes below 1%). With increasing the d2w content, the tensile strength of polyethylene slightly increased (by approx. 4.5%) and its relative elongation at break improved (by approx. 5.2%), while hardness and density did not change to any significant degree (changes below 1%). The average Young modulus of polypropylene slightly increases (by approx. 2.5%), whereas the average Young modulus of polyethylene clearly decreases (by approx. 9.5%).

*Key words:* biodegradation, injection molding, molded piece, polymer processing, prodegradant

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