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PROPERTIES AND STRUCTURE OF INJECTION MOULDED PARTS MADE OF REPROCESSED FOAMED HDPE

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The foaming of thermoplastic polymers gives the following advantages for injection moulded parts: weightreduction, material saving, good thermal and acoustic insulation and warpage and sink marks elimination. Examinations were carried out to determine the influence of reprocessing of polyethylene with chemical blowing agent addition on parts mass, selected mechanical properties, structure and surface state. Samples were made of HDPE Hostalen GC 7260 without and with 2% and 4% addition of Hostatron P 1941 endothermic chemical blowing agent. Properties of samples made of 1 to 5-time recycled polymer were examined. During the injection moulding process the holding pressure and holding time was changed according to the blowing agent content. It was found that the application of the blowing agent improved parts dimensional accuracy, but lowered tension strength and caused the change in their colour. Multiple foam polymer recycling did not caused significant lowering of parts mechanical properties. Microscopic observations showed that there is no porous structure in samples made of 5-time recycled HDPE with 4% blowing agent, so it means that the foaming process stopped. The DMTA and DCS investigations were also performed. Some small changes in the degree of crystallinity for parts from recycled foam polymer was observed.