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EXTRUSION METHOD OF THIN-WALLED, AXIS – SYMETRICAL CELLULAR PRODUCTS

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The thermoplastics cellular extrusion technology is used to obtain cellular profiles, rods, pipes and coatings with a lower density, free of depressions and showing minimal shrinkage while retaining properties similar to products extruded with a conventional method. The properties of a cellular extrudate not only depend on the type of plastic, porophor kind and content, dimensions, number and geometric characteristics of pores formed in the process, but also on the applied method and conditions of the extrusion process. The quality of a cellular product is largely influenced by the distribution of temperature in the plasticising system of the extruder and extrusion head as well as by extrusion speed. In the case of a low extrusion speed, the blowing process occurs near the nozzle, which may result in an uneven cellular structure. The process of modified PVC extrusion was conducted in a coating extrusion processing line. The processing line is used for the production of the outer coating of a power cable. In the research, a single-screw extruder with a coating extrusion head, a cooling device (cooling tub) and a collecting device were used. The extrusion process was performed with the use of exchangeable extrusion screws, a slow-speed and a high-speed screw. The set reception speed of the extruded product ranged from 10 to 80 m/min. The plastic was modified with a new original blowing agent with an endothermic decomposition characteristic and nucleidising properties. Between 0.2 and 0.6 percent by mass of the agent were introduced into the plastic. The agent constitutes a material system, in granulate form, where PVC is a carrier of the blowing agent. As a result of the cellular extrusion process of PVC containing the blowing agent, extrudates were obtained with a solid or cellular external coating and a cellular core.