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# Extruded Profiles: a Study on the Processing-Microstructure-Properties Relationships

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In this work, a rectangular polypropylene profile was produced using several different extrusion conditions, in order to identify the most relevant processing variables determining its morphology and mechanical properties and to establish relationships between them. A Taguchi Design of Experiments (DOE) technique considering two levels for each variable (operating conditions) defined the set of extrusions runs carried out. The resulting plastic profiles were characterized in terms of their microstructure and mechanical properties. It was concluded that the most significant processing variable determining the mechanical properties of the profiles is the extrusion temperature and that the drawdown ratio controls the degree of molecular orientation of the profile and, therefore, the extension of its shrinkage after heating.