Influence of glycerol content on the rheology and microstructure of starch based loose-fill packaging made by thermoplastic extrusion

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Foam products of plastics are extensively used as cushioning materials to protect fragile products during handling and transportation them in order to sell. Environmental problems created by the synthetic plastics have made in recent years to strive to replace petroleum-based foams with biodegradable polymers foams. Biodegradable polymers decompose in the environment under the action of microorganisms in the presence of water. One of the most used biopolymers is starch, a cheap material and present in abundance in cereals. In addition, starch lends itself particularly well to expansion by thermoplastic extrusion.
Making a product with appropriate characteristics for the intended purpose requires the use of formula that includes besides starch a series of plasticizers. This paper presents some results obtained during researches conducted in order to obtain a biodegradable corn starch-based loose-fill by thermoplastic extrusion, when using in different reports between starch and plasticizers in the formula. Increasing the levels of glycerol in the formula leads to lower viscosity value of the mixture and changing structure of the finished product.