

# THE ROLE OF WATER ON THE EXPANSION INDEX OF STARCH BASED PACKING PEANUTS

Nicolae CIOICA<sup>1</sup>, Constantin COȚA<sup>1</sup>, Maria TOMOAIA-COTIȘEL<sup>2</sup>,  
Ossi HOROVITZ<sup>2</sup>, Aurora MOCANU<sup>2</sup>, Mihaela NAGY<sup>1</sup>

E-mail: [ncioica@yahoo.com](mailto:ncioica@yahoo.com)

## Abstract

Thermoplastic extrusion has been used to produce starch-based packing peanuts, in a similar way to the production of extruded expanded snack foods. Native starches are non-plastic due to the intra- and intermolecular hydrogen bonds between the hydroxyl groups in starch molecules, which represent their crystallinity. Thermo-mechanical processing is used to disrupt and transform the semi-crystalline structure of starch granules to form a homogeneous and amorphous material. This transformation is usually accomplished using small amounts of molecular substances commonly known as gelatinization agents or plasticizers. This paper presents some aspects of producing packing peanuts based on starch by means of thermoplastic extrusion, putting an emphasis on the working diagram describing the extrusion mechanism with direct expansion of a partially crystalline polymer and the mechanism of extrudate expansion with application to the influence of water content on the expansion index.

**Key words:** packing peanuts, starch, water, expansion index

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<sup>1</sup> INMA Bucharest, Branch Cluj-Napoca

<sup>2</sup> Babeș-Bolyai University, Cluj-Napoca