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**Research area: Product aims**

Packaging papers and paperboard

**Key words:**

Hot-melt-adhesives, starch-based, Bio compatibility

**TITLE:****Development of bio-based hot-melt adhesives and their use in paper and cardboard packaging, „Glykopack“****Background/ Problem area**

The German packaging market is constantly growing and paper products play an essential part in it. In many cases they seem to be an ecological alternative to plastic packing materials. This position could be further strengthened in future if the adhesives used, which often need to be applied in great amounts during production, can be made from renewable resources.

Since the time when thermoplastic starches entered the market, efforts have been made to use starch and carbohydrate-based polymers for hot-melt adhesives. Numerous papers and patents describe products that could be manufactured from these base materials, but none of them has made it to the market yet.

**Objectives/ Research results**

The goal of this research project is to develop a starch-based hot-melt adhesive and to get it ready for the market. The main applications are folding boxes and corrugated board packaging. The materials used are to be evaluated in terms of availability, costs, processing properties, adhesion, aging and recyclability of the processed products, and to be implemented in industrial applications.

The recipe development in the laboratory has been largely completed. For further analysis (adhesion, thermostability) the best variants of bio based hotmelt will be produced in larger batches in kneader and/or extruder. A new measurement method to assess the adhesive force of hotmelts will be developed.

**Application/ Economic benefits**

The market for biodegradable materials in packaging and every aspect of daily life has grown at a fast pace in the last decade. The general awareness for environmentally friendly products has risen and companies have recognized the potential offered by the marketing of the eco-friendly products.

With new adhesives that could reduce the amount of waste to be burnt or deposited on waste disposal sites, this project contributes to making established manufacturing processes more ecological. In Germany alone the market value of adhesives for paper and cardboard packaging amounts to roughly 9 billion Euros, a large figure that ensures the interest of industrial companies in technological advances in this field.

**Period of time: 01.09.2015 – 31.08.2018**

**Remarks**

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