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Research area: Product aims

End products made of paper, paperboard and board // Other

Key words:

Coating, pre-coating, biopolymers, nanocomposites, hybrid polymers, microencapsulation, package production

Title:**Innovation and Sustainable Development in the Fibre Based Packaging Value (SUSTAINPACK) – Sub-project 4: Protective Coatings****Background/Problem area**

Packaging is a true multifunctional product and RTD involves a broad area of research. Packaging involves all partners in the supply chain from production and manufacturing, through filling, warehousing and distribution, retail and consumers. Together they impose many demands on the packaging functionality that are often diverse and contradictory. Against this background the Sustainpack project has been launched because the development needs exploitation of many research disciplines, many industrial players and a well developed dissemination plan. The different RDT components integrated in the project are: Technology mapping of fibre based value chain (Subproject 1), lean fibre based packaging (Subproject 2), fibre based composites (Subproject 3), protective coatings (Subproject 4), 3D composite packaging (Subproject 5), and communicative packaging (Subproject 6). In the following summary Subproject 4 is described in more detail.

Objectives/Research results

The overall aim of Sub-project 4 in Sustainpack is to develop new coating and printing technologies for protective properties, i.e. barrier and mechanical resistance. These new technologies are based on biopolymers and nano-composites. An objective is also to tailor materials in order to obtain a desired set of properties suitable for a given application and to meet consumer needs and perception. For coatings, some of the concepts to be further investigated are:

- enhanced performance by nano-sized materials
- hybrid polymer/organosiloxane based functional coatings
- microencapsulation and
- smart polymers with properties that easily can be triggered by some ambient condition

In the printing area an important issue is local reinforcement in order to minimize the damage during converting steps such as cutting and creasing. However, several of the developed coating material systems may be applied at a printing press as well. The work will address aqueous coating and printing systems. The raw materials used should either already be approved for contact with food or have a high possibility of approval upon application later on.

Several types of coatings and microencapsulated agents for water protection have been developed at the laboratories of the participating organisations. These will be further optimised into coating and printing formulations and investigated by screening protocol that has been established. The screening protocol defines a methodology common to all the Sub-project 4 partners to check the properties of the packaging materials produced with the new innovative coatings. An overview has been created to give a summary of the packaging products available on the market today. The properties required by these packaging products are described as well as the existing tests to control the packaging characteristics. The screening protocol is based on this overview and will be continuously improved over the lifetime of the project. It is assumed that it will be a useful tool for the European paper and packaging companies in product development and selection.

Application/Economic benefits

Through the projects focus on sustainability, a significant step forward for packaging based on renewable resources will be accomplished, bringing innovation into the related industries and also create a platform for SME-related technology development. The deep integration of packaging in consumers every day life, and its influence on ecology and economy, makes packaging an important part in achieving sustainable growth.

Project period: 01.06.2004 – 31.05.2008

Remarks

The integrated research project SUSTAINPACK (contract no. 500311-2) is being funded by the European Commission covering six Subprojects as mentioned in the introduction. In Subproject 4 "Protective Coatings" the following partners are involved: Karlstad University (Subproject leadership), Ahlstrom Research Center, Centre Technique de Papier (CTP), Fraunhofer Gesellschaft, Ytkemiska Institutet AB (YKI Stockholm), PTS, Scotland Hallam University, Storaenso, Research Laboratory of Bordeaux University (UBX1), Agricultural University of Szczecin, Walki Wisa, XaarJet AB.