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Research area: Product aims

Paper, paperboard and board // Technical speciality papers

Key words:

Organic synthetic fibers, binding fiber, core-sheath, high-temperature fibers, matrix fibers

TITLE:**The application potential of Organic synthetic fibers in regard of product optimisation and development of innovative paper products****Background/Problem area**

Searching for new products with high value added, the paper industry has been focusing to an ever greater extent on the fringes of the textile sector as well as the film and foil industries in which it is of the utmost important to selectively adjust the specific properties of the products. The material paper constitutes a flexible material base for supplementary products in the areas of light-weight construction, functional packaging and fiber composites. Synthetic organic fibers are a promising tool for expanding the potential properties of technical specialty paper in respect of strength, convertibility and resistance to chemical attack.

Objectives/Research results

In addition to classical paper fibers, there is also a constantly expanding range of synthetic special-purpose pulps that can significantly improve the performance of paper as a material. The studies are intended to focus on bonding fibres, fibrils, and fibers based on biopolymers and functionalized fiber types, all of which are to be evaluated with respect to their morphology, applicability in wet processing and their property spectra. Based on the results, recommendations can then be made for product development and system optimization. The objective is a practice-oriented property mapping of synthetic organic fibers as far as their impact and processability in wet processing are concerned. The focus will be placed on those fibers that, until now, have typically not been used or only rarely used in the papermaking process.

Suitable fibers will be proposed, selected and, if need be, provided by the project partners. In addition to the manufacturer's details, the fibers will undergo supplementary examination regarding morphology and suspensibility, and initial sheet formation trials will be conducted using the Rapid Köthen sheet former. Based on these preliminary trials, several types of fibers are to be used for trials concerning the combination with reinforcing fibers like carbon, basalt or glass und functional fillers. Also further processing steps as forming (fluting), thermal molding and impregnation will be tested with selected recipes. The results are intended to provide recommendations for the use of synthetic fibers for a variety of different approaches in product optimization and product development.

Application/Economic benefits

This study will give an overview about applicable organic synthetic fibers available on the market. Handling of the fibers will be described as well as possible approaches for tailored product properties achievable, e.g. mechanical strength, haptics, moisture adsorption, elasticity, etc. Also it will give an overview about producers and prices.

Period of time: 01.10.2014 – 30.09.2015

Remarks

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