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Research area: Product aims

Paper, paperboard and board // Packaging papers and paperboard

Key words:

Paper recovery, recovered paper treatment, recycled fibre pulps, strength properties, ingredients

Title: Forecasting the recovered paper composition in Germany under the influence of global packaging paper flows and the effects resulting from it**Background/Problem area**

The economic growth in China and other countries of the Asian-Pacific economic area has led to strongly increased consumer good imports from this region into Europe. This goes hand in hand with growing imports of recovered paper in the form of packaging, especially corrugated board packaging. Nothing is currently known about relevant quantities of these packaging materials. Likewise, it is not possible to judge to what degree these recovered paper flows will influence the technological and ecological quality parameters of recovered papers for corrugating base production in Germany. Another aspect to be considered when assessing used paper and board packaging from the Asian-Pacific economic area is the specific economic and legal conditions governing the use of processing aids and functional additives in papermaking and converting operations in this region. European companies and trade associations are in favour of implementing both practically relevant and scientifically founded assessment procedures for used packaging paper and board indirectly imported from these countries - in the interest of consumer protection and to safeguard the product quality and process stability of corrugating base production.

Objective/Research results

The project aims to estimate the mass flows of used packaging paper and board from the Asian-Pacific region into Germany. In addition, selected technologically relevant quality parameters (e.g. morphological properties, mineral components, drainage behaviour, COD, macro stickies) of recycled fibre pulps will be investigated by pilot- and lab-scale tests. The strength properties of papers produced from the recycled fibre pulps, for example SCT, bursting strength, ply bond strength, will be measured. Another aim of the project is the quantitative assessment of the content of harmful substances (especially DIPN, phthalates, PCP and BPA). Based on the results of these investigations, we will estimate whether and to what extent increasing shares of used packaging paper and board from the Asian-Pacific region must be expected to cause higher shares of critical substances in corrugating base papers.

Tests were done using corrugated board transport packages for textiles, footwear, electrical appliances and bicycle components. The industry partners involved in the project supplied an overall amount of 3,7 t sample material. Most of the packages investigated came from China – corresponding to the country's share in mass-related imports - followed by India, Vietnam, Bangladesh and Taiwan. To estimate the mass flows, packaging factors (quotient of tare weight and the net weight of packed goods) were determined and linked with data issued by the Federal Office of Statistics about imports from the Asian-Pacific economic region. The mass of indirectly imported corrugated board transport packages determined by the various calculation scenarios is currently estimated at between 600.000 t/a (minimum) and 1.950.000 t/a. The technological use value characteristics of the recycled fibre pulps investigated are nearly comparable to those of pulps obtained from German supermarket corrugated paper and board. The recycled fibre pulps obtained from transport packages of the product groups investigated here differed only slightly in these characteristics.

Harmful substances identified in the recycled fibre pulps were PCP (amounts of up to 350 µg/kg in individual cases) and halogenated organic compounds (OX contents of up to 400 mg/kg in some of the samples). The type and composition of the mineral oils contained (probably from printing inks) should be investigated in detail by further studies.

Application/Economic benefits

Mass-related mixing algorithms were used to develop scenarios representing the influences on the properties of recycled fibres obtained from domestic or European used packaging paper and board as a function of their mixing ratios with recovered papers from the Asian-Pacific region. The paper-technological properties determined by these scenarios were linked with estimated import quantities, leading to the conclusion that the adverse effects on the average use value characteristics of used corrugated paper and board from national sources can be expected to be only marginal.

Based on these results, the co-operation partners and project observers proposed further investigations to broaden the data basis.

Project period: 01.08.2009 – 31.07.2010

Remarks

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