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Research area: Product aims

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

Key words:

Corrugated board, Glue line quality of corrugated board packaging

TITLE:**Development of a method for the objective evaluation of the adhesive seam quality of corrugated board packaging****Background/Problem area**

The Free State of Bavaria is an important industrial location for the German corrugated board industry. Approx. 20 % of all German corrugated board products are manufactured in more than 20 plants in Bavaria with a total staff of 3600 employees. This accounts for approximately one-fifth of all German-wide sales in this sector.

In order to manufacture corresponding transport packaging, an essential process step is not only the production of the corrugated board itself, but also how it is processed. During this process, the material is die-cut, folded and glued to form corrugated boxes. The gluing step plays an important part here, since it contributes to the stability of the packaging. It has also been discovered, however, that the adhesive seam of the packaging often causes breakage or damage to the packaged merchandise in trade or in the consumer goods industry. As a result, the adhesive seam must be examined and evaluated in order to ensure quality standards. Until now, however, there has never been an independent and physically correct evaluation procedure, thus giving rise to an urgent need to develop one.

Objectives/Research results

During the project an objective and physically correct test procedure for evaluating and testing the quality of the bond strength of corrugated board packaging was developed and checked. The new procedure and test unit for evaluating the bond strength of corrugated board packaging is easy to carry out and performs shearing and peeling loadings on the reference block of a corrugated board.

An initial prototype of the measuring instrument was developed and evaluated for practical suitability within the scope of the project. As a result, the impact of the type of corrugated board and of the test procedure themselves on the test results was examined in detail.

The validation of the test control unit shows generally no significant influence on the measurement result. To ensure an optimal comparability, a standardized procedure to measure the bond strength is recommended.

The measuring equipment ensures a simple, fast and safe measurement of the bond strength. The documentation of the damage symptoms and the fracture behavior are important for the assessment.

Application/Economic benefits

The new objective and physically correct measuring procedure for evaluating the bond strength of corrugated board packaging mean the further development and expansion of PTS testing and consultancy services. A distributable version of the test equipment was developed and presented at the DRUPA 2016.

The direct benefits accruing from these research results will also be advantageous for firms in the mechanical engineering sector who manufacture testing instruments. Companies can expect additional sales in the corrugated board industry from the results of this project. The scheduled project objectives will make a substantial contribution to the innovative capacity of this sector domiciled in the Free State of Bavaria.

In addition, Bavarian manufacturers of corrugated board packaging including the associated added value chain can guarantee a high quality standard of their products as a result of the knowledge transfer from the project. This in turn will lead to a further strengthening of Bavaria as an industrial location.

Period of time: 01.03.2015 – 29.02.2016

Remarks

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