Master's Dissertation at the Div. of Structural Mechanics

MODELLING ADHESION IN PACKAGING MATERIALS
Physical Tests and Virtual Tests in Abaqus

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Presentation
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Report
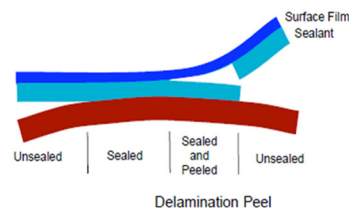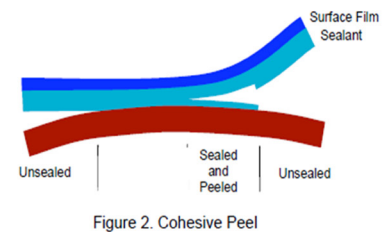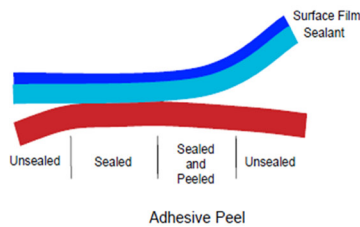will be published as report TVSM-5188

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Adhesive Peel

Figure 2. Cohesive Peel

Delamination Peel

Bakgrund

During its lifetime a package is exerted to different loading conditions. An increased knowledge is therefore needed regarding how the package material reacts to the prevailing loading scenario in a real case situation. Describing a material in a non-linear elastic-plastic framework is the easiest way and often most applicable in many industrial applications. To develop packages for new applications, the mechanical behavior of opening devices is of great interest. On the market several different concepts exists; cutting through material, tear openings and shear openings. Having a good opening performance is crucial for the overall package performance and functionality. A better knowledge of how the damage initiates and propagates in peeling like openings, depicted in Figure 1, is of great interest.

Objective and method

A literature study, to gain knowledge about the physical phenomenon of adhesion, and an investigation of the different ways to implement adhesion in Abaqus will be done. A number of setups will be tested experimentally and evaluated regarding adhesion properties. Adhesion properties will be implemented in Abaqus, and calibrated, with the objective to describe the experimental results. A relevant application will then be modelled Vin Abaqus. The knowledge gained from this thesis will be implemented in future FE-calculations of multilayer packaging.

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