

“Optimal peelable seals in packaging concepts undergoing thermal processing”

During the last decennium, the consumer demand for convenient food packaging has steadily increased. **Having an easy-to-open seal is a crucial aspect, both for convenience as for the quality assurance of the food product.** This demand has motivated material researchers to develop new sealants that are now on the market. However, to the best of our knowledge, research into the **post-seal quality during and after (thermal) treatments has not been investigated thoroughly.**

Therefore, **the aim of the CORNET project is to investigate the effect of thermal processing on the quality (e.g. seal strength, tightness) of the easy-peel seals before, during and after such treatments.**

What are the practical questions we want to answer?

- Which packaging material should I choose when I have a target consumer peel force in mind, and have a well-defined thermal treatment step to assure product safety?
- What is the effect of the parameters of my sealing machine (time, pressure, temperature) on the seal quality before, during and after thermal treatment?
- When applying thermal treatment, what is the maximal temperature gradient I can induce that still guarantee a good quality seal?
- How do package shape and seal contour influence the seal integrity during thermal treatment?

How will we do this?

- We will select the most relevant film/tray material, and will characterize them using reference methods (DSC, viscosity, physical parameters).
- We will investigate the relation between (film x seal parameters x thermal treatment parameters) and the seal quality. This will be based on samples rather than on packages to standardize our measurements and findings.
- We will then run experiments on the packaging level, where we focus on trays and pouches.
- We will use these results to develop an optimization model with a limited number of tests to predict the peel behavior.

Expected results and practical recommendations for industry?

- We will **apply the results on films or packages of our user commission.** This way, there is a direct benefit for their own business.
- A **best practice guide** will tell a producer which packaging material to use, how to seal it, and will define limits on thermal gradients the package will be able to resist.
- An **easy-to-use module** will be developed and will be accessible to user committee members to optimize their own process.

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