

Technical Case Study

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July 11, 2018

Reducing Food Waste and Enhancing Recyclability



Over 1/3 of the world's food is wasted each year equivalent to 1.3 billion tons according to a report by the UN Food and Agriculture Organization. To help combat the waste, packaging needs to be designed with the appropriate barrier protection to extend the shelf life of the product after processing. Barrier protection can be imparted in several ways including:

- The material construction using aluminum foil, metallized films, aluminum oxide coatings, barrier coatings, EVOH, etc.
- Modified atmosphere environments where various gases are introduced to displace the residual oxygen within the package
- Perforations or holes to control respiration
- Sachets or moisture absorbers
- UV inhibitors

The design of flexible packaging has been effective at extending the shelf life of many food products. One of the challenges with packaging organics such as produce is that each food has its own characteristic

respiration rate. The current technical case study includes packaging for a variety of cole slaw which requires a respiration rate of >200 OTR.

The Issue

Although the current lamination worked satisfactorily in the application, the customer desired to improve the marketability of the product. Primarily, the customer was concerned that the current surface printed lamination (ink / 2mil LLDPE) lacked stiffness and the surface printed graphics were considered dull in appearance.

The APC Investigation and Solution

To maintain the targeted OTR rate, the material of choice remained polyethylene. The ideal situation would be to reverse print and laminate thinner films achieving the desired gloss and improved stiffness while maintaining the same overall caliper or taking advantage of opportunities for downgauging. The

challenge is that conventional blown film technologies can be challenged producing films of such a thin caliper.

Fortunately, one of APC's vendor partners had recently developed a new oriented film capable of achieving these thinner gauges while retaining stiffness. This new film was sourced at a thickness of 70ga and laminated to a 1.25mil version of the LLDPE currently



Figure 1: Shelf life extensions made possible through packaging design – values in days

used in the surface print laminate. This maintained a similar thickness while greatly improving the gloss and stiffness of the package.

In addition to achieving the performance attributes desired, APC also advised the customer that the new laminate structure had passed the TREX recyclable protocol offering the potential for front of store drop-off recycling.

