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Tek Tip

Common Lidding Film Failures Explained

The lidding film failures on your manufacturing line may have a simple explanation...

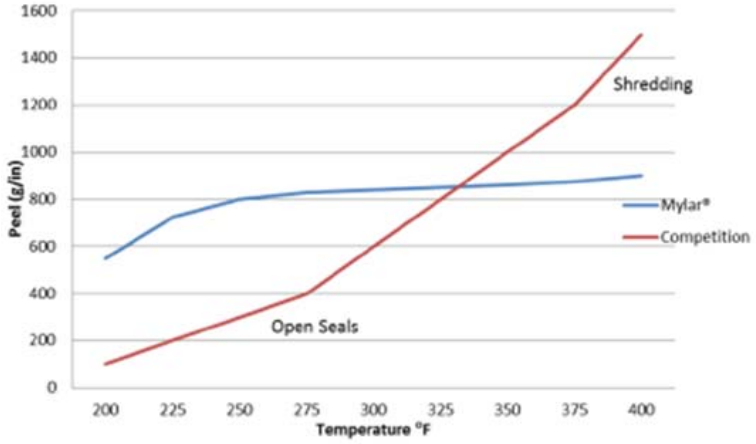
Life in food manufacturing does not always go according to plan. Luckily, when it comes to lidding films, an understanding of a heat seal curve and how it impacts your application makes packaging outcomes predictable.

When sealing a lidding film, there is a relationship between the sealing temperature and the resulting peel force. First, let's examine the problems common on both ends of the temperature spectrum:

Open seal failures: Open seals can occur in manufacturing due to lower equipment initiation temperatures resulting in lower peel force values. When this occurs, a weak bond is established between lidding film and tray substrate. This scenario commonly ends in a broken seal during production or worse yet, downstream. The open seal issue is shown in the chart below, where the red line dips below 400 g/in in peel force value.

Lock down seals: The other end of the spectrum (i.e. elevated temperatures), can result in too great a bond between film and tray. In this scenario, a lock down effect often occurs - making the film / tray bond difficult to remove causing film 'shredding'. This phenomenon is demonstrated with the red line on the graph, where the peel force values surpass 1200 g/in. It should be noted that there are some applications when a lock down seal is desired, and there are films designed for this purpose.

Lidding Film Heat Seal Curve



A combination of low seal initiation within a broad operating temperature plateau is most desirable for lidding film. The best outcome for a seal lies in the middle of these two extremes: ideally between 600 g/in and 1000 g/in depending on the application. Peel force values in this range offer the end customer a sage seal with an easy peel, free of shredding. Lidding films that offer a consistent strength over a broad range of temperatures prevent weak seals during processing and downstream distribution. This broad heat seal performance range allows for improved flexibility and consistency in your manufacturing line, with trusted performance across a change of machines and operators running the equipment. Keeping your lidding production lines running at lower temperatures eliminates thermal distortion of the tray, reduces wear on equipment and permits faster production speed.

Another benefit of a peelable film is the ability to rework in the manufacturing process. Almost all packaging lines have an automatic weighing scale at the end of the line. If the amount of food in the tray is low, that tray would be moved to the side of the line for the operator. The peelability of the film becomes very important in this situation because instead of throwing the rejected container away, the film can be peeled back and more food can be added. Then, the tray can be put back to the beginning of the line to be resealed. Any leftover film on the tray flange caused by shredding would prevent the film from being resealed. Therefore, films with forgiving heat seals are generally more peelable and rework friendly, unlike films with a steep heat seal profile.

Looking at the graph, Mylar® Harvest Fresh (represented by the blue line) is compared to a competitive film (represented by the red line). The red line is undesirable due to the narrow operating window and the failures on both ends of the graph. Mylar® Harvest Fresh, demonstrated by the blue line has a broad operating window and is desirable for both operator and processing equipment. Mylar® polyester lidding film is a best-in-class example of a film that offers a flat heat seal curve within a wide temperature range.

To learn more about the fragile relationship between lidding film and tray substrates, visit our lidding and sealant packaging films webpage.