

Preventing Cockling of Paper Release Liners

Berry Global, Health, Hygiene, and Specialities
February 2023

Introduction

For manufacturers and pressure-sensitive tape users, the summer humidity can create concerns about cockling liners. While we cannot stop, or be held responsible for, the forces of nature, we can explain the reason for cockling and offer potential ways to deal with the problem.

What is cockling?

If you have manufactured or used pressure-sensitive tapes with a silicone-coated, densified kraft release liner, you have likely seen cockling. Paper, by its very nature, is an absorptive medium. In high humidity, paper absorbs moisture from the atmosphere, causing it to swell and grow in all three dimensions. This creates the waviness or wrinkling referred to as “cockling”.

All paper-based products cockle to some degree. For example, densified kraft cockles quite visibly while other paper products cockle more discretely.

To help prevent cockling, there are several coatings that can be applied to your paper-based products. Poly-coated liners have a polyolefin (plastic) coat on both sides of the base paper that helps encapsulate and prevent the paper from absorbing moisture. Higher basis weight paper with a poly-coating layer can further protect against cockling. However, these steps do not eliminate cockling all together.

How Could Cockling Impact you?

During cockling, the paper grows in all dimensions and the pressure-sensitive tape does not. This can create creasing and wrinkling during the laminating process. To avoid this, an end user might unwind a couple of wraps of tape before revealing a non-cockled product, resulting in wasted material. If not properly protected, mounting surfaces, which are pre-laminated with tape, can cockle before the secondary laminating process and create wrinkles in the secondary laminating process.

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How to Manage Cockling

As a partner in your process, we continuously seek new solutions to prevent cockling from impacting your operations. Cockling can be thought of as an “outer surface phenomenon,” meaning that only the paper on the exterior of the roll has enough exposure to moisture to become cockled. With this in mind, there are several ways to protect the outer layer of your tape during the summer months and in high humidity environments, including:



- **Proper Storage:** Rolls of tape with paper liners should be stored in a cool, dry environment where they are protected from dirt, extreme temperatures and humidity, and damage.
- **Protection:** Placing plastic wrap around each roll, including both ends, will help to keep the moisture from getting to the paper.
- **Maintenance:** When a laminating job is complete, the remaining roll should be wrapped in plastic, even if it is still on the machine.
- Any product already threaded through the laminator will be unprotected and may need to be discarded if it develops severe cockling prior to the next job.
- Pre-laminated parts (foam sheets, pre-coated graphic arts mounting boards, etc.) should be wrapped in plastic and stored in a controlled environment.

For some applications, even a small degree of cockling is unacceptable. In these situations, it may be necessary to seek alternate liner solutions such as:

- Poly-coated liners that offer a degree of protection from cockling.
- Board liners. Although 12-pt board is a paper-based liner, its heavy basis weight double-sided layer of poly-coating virtually eliminates cockling.
- In some cases, a film liner may be the answer. Plastics are less absorptive than paper and therefore not susceptible to cockling.

Moving Forward

We encourage you to share this information with your operations personnel, sales force, and customers to help increase awareness of cockling and the different methods to prevent it.

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