

A close-up photograph of a person's hand applying a strip of bright orange adhesive tape to a brown cardboard box. The tape is being applied to a seam, and the hand is shown in the lower right corner, with the thumb and index finger visible. The background is a blurred brown surface.

Shurtape[®]

TRUE TO YOUR WORK[®]

**DOUBLE-DOWN ON
CASE SEALING SUCCESS**

**FOLDED TAPE EDGE ENHANCES RELIABILITY,
PRODUCTIVITY AND SAFETY**

For many manufacturers, end-of-line packaging – where goods are placed and sealed into secondary packaging like corrugated cartons – serves as one of the last lines of defense to ensure finished goods arrive to their final destination in excellent, saleable form.

It's a common process in manufacturing facilities across a variety of industries, but doesn't always carry the same approach.

Manual labor, for example, is still used by some manufacturers for tasks like picking and packing. Others, searching for opportunities to improve the efficiency of their operation by enhancing uptime, reducing labor costs and minimizing material waste, have moved to automation for everything from case forming and packing to sealing and palletizing.

Here, we'll focus on case taping and sealing – a small, but critical, function of the overall end-of-line system – as well as discuss how folding the edge of the tape as it's applied can enhance the reliability of the seal, the productivity of the line and the safety of those opening the cartons.

CASE TAPING: NOT AS CLEAR-CUT AS IT SEEMS

In theory, the case sealing process is simple: cartons go in, tape is applied, and sealed cartons are palletized for transport or storage.

But in reality, application of packaging tape isn't necessarily an exact science. It's a delicate balance in which the packaging machine, corrugated box, tape applicator and packaging tape must work together in harmony to ensure cartons are closed securely to keep products inside safe.

There are many factors that can impact the tape's ability to remain adhered to the carton. Environmental conditions such as dust, dirt, humidity and cold temperatures can play a role in the performance of packaging tape, as can characteristics of the surface to which it's being applied.

Factors that can impact the reliability of the seal include tension from a misadjusted tape applicator, stress from a high-speed operation or even poor unwind characteristics of the packaging tape. These issues can lead to tape stretch or breakage, negatively impacting the quality and reliability of the seal, as well as the uptime of the line.



Automating packaging line functionalities can improve operational efficiencies by enhancing uptime, reducing labor costs and minimizing material waste.



For the best seal for cartons, the case sealing equipment and packaging tape must work together in harmony.

TAPE STRETCH

Think about a rubber band. It's stretched to wrap around items to bind them together, but when removed, has a natural tendency to return to its original shape and size.

Packaging tape is not unlike a rubber band. Tape is unwound from the roll and applied to the carton surface to seal the flaps. But, due to the tape's backing being constructed of polypropylene film, which has elastic-like properties, there's a susceptibility for the tape to return to its natural resting state.

A desire intensified by overstressing the tape during application, which places unnecessary stress on the seal. With the added stress on the adhesive, the tape is subject to pop and the carton to open, leaving product exposed, forcing costly reworks, and increasing the risk of downtime should the case reach an automated palletizer.

In many cases of overstressing, excessive tension is the culprit. This is often a result when a tape applicator's tensioning is adjusted too tightly, in high-speed operations where additional unwind force is placed on the tape, or when tapes with high unwind characteristics are used.

Tape failures due to stretch, such as flagging and lifting, are also prevalent with acrylic tapes due to the viscosity – or liquid-like state – of the adhesive that makes it capable of flowing out when stress forces are met and in operations in which the tape applicator is not providing sufficient wipe-pressure as the tape is applied.



Because packaging tapes are pressure-sensitive, they require some type of force to create a bond to the carton. The proper amount of pressure drives the tape's adhesive into the surface, allowing it to entangle itself deep within the fibers of the carton; without this pressure, the adhesive may not fully engage with the carton surface, increasing the possibility of it releasing under stress.

TAPE BREAKAGE

Another issue that can affect the end-of-line case sealing process is tape breakage. Typically occurring within the automated tape head as the tape goes around the rollers, these break outs can lead to missed seals, machine or line downtime, and material waste.

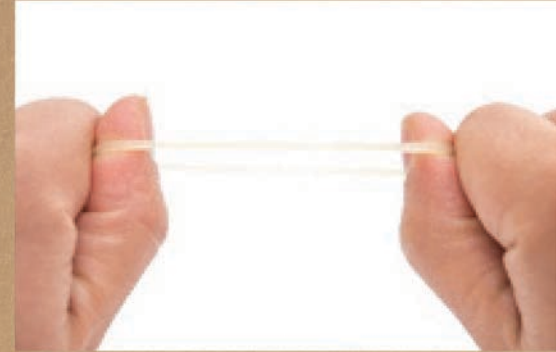
Unfortunately, the risk for breakage may be somewhat inherent due to the manufacturing process for tape.

During the manufacturing process, microscopic nicks are inherently created in the edges of the tape. These

may be stressed to the point of fracture when paired with high tension from a poorly adjusted tape head, high-speed operation or high-force unwind from the packaging tape roll.

GIVE ISSUES THE FOLD

Achieving the perfect balance between tape applicator and packaging tape sounds daunting. But, the economical and day-to-day performance benefits of taping cases are tough to ignore. So, now what? Give the system more reliability. Case sealing technology has come a long way, with new innovations allowing for faster tape application, tab length adjustments, quick and easy tape roll changeovers...even the ability to fold the edge of the tape as it's applied. The latter making the tape – and seal – more forgiving, allowing more



Packaging tape is stretchy like a rubber band, which can cause issues if overstretched during application.



room for errors in equipment adjustments, as well as adding strength to the tape to accommodate variations.

In the remainder of this article, we'll take a closer look at Folded-Edge® Technology, a feature of Shurtape's ShurSEAL® automated case taping system. The patented folded-edge attachment is mounted to the tape applicator's dancer arm, providing the ability to fold the tape edges from 1 mm to 3 mm. This edge-folding technique addresses – and eliminates – potential issues as tape is applied, resulting in better consistency and productivity in the case sealing process, as well as stronger, more reliable case seals.

Why Fold the Edge?

Folding the edges of the tape as it's applied essentially kisses the adhesive together to produce an edge that's double the thickness of the tape. This creates a more uniform, stronger tape edge, enhancing the reliability of the seal, the productivity of the case sealing process and the safety of tape removal for those unpacking the carton contents.

INCREASES RELIABILITY

The expectation of the case seal is that it will withstand the rigors of the distribution network to ensure contents are delivered intact.

The folded edge on the tape increases the seal's strength, particularly at the most vulnerable failure point – the edges where the major flaps meet the side of the carton.

The additional strength reduces the risk of the tape being nicked and broken, providing an added layer of security to keep contents secure from damage, contamination and theft.

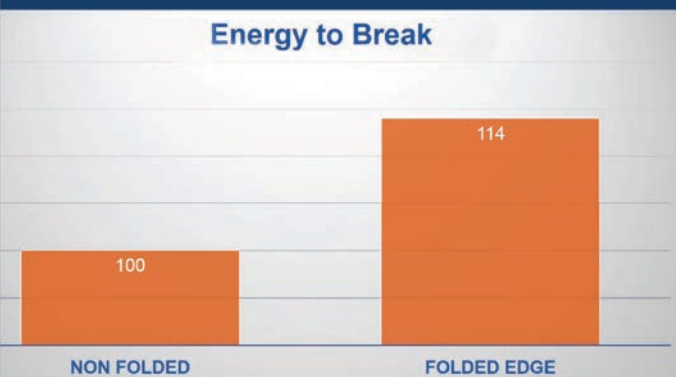
In some cases, folding the edge even creates the ability for users to down gauge tape grades. Packaging tapes are available in a variety of grades – meaning varying levels of film thickness and amounts of adhesive – which ensure the right holding power and tensile strength for the case seal. Tape grade is selected based on several factors, including the carton's size, weight and production/shipping environment.

By combining ShurSEAL's Folded-Edge Technology with the unmatched wipe-down force offered by the system's tape applicator, a result of multiple flexible wipe-down mechanisms that deliver full utilization of the



ShurSEAL's patented folded-edge attachment folds the edges of the tape as it's applied to the carton.

Energy to Break



Folding the edge of the tape increases the energy to break by 14%. Energy to break is a measure of the force and stretch of the tape when it breaks.

tape's adhesive, users may have the option to down gauge tape, but still deliver the same or better case seal performance.

INCREASES PRODUCTIVITY

As noted earlier, tension placed on the tape during application can lead to inefficiencies such as downtime, reworks and material waste. That stress intensifies with poorly adjusted equipment, as the speed of the line increases, or even as the size of the roll decreases. When using Folded-Edge Technology, the tape is able to handle more stress, allowing it to process faster and better.



instrument – can yield unforeseen damage and harm.

One unfortunate result of using a sharp instrument to open cartons is product damage. Once a product's packaging is compromised, it is likely to be considered unsaleable. In fact, the Grocery Manufacturers Association and Food Marketing Institute estimate that damaged product and other unsaleable items cost consumer packaged goods manufacturers \$15 billion annually – or 1 to 2 percent of a manufacturer's gross sales.

Returns are such a common practice in business that many retailers and manufacturers have agreed-upon return and/or damage allowances built into purchase orders to cover anticipated loss.

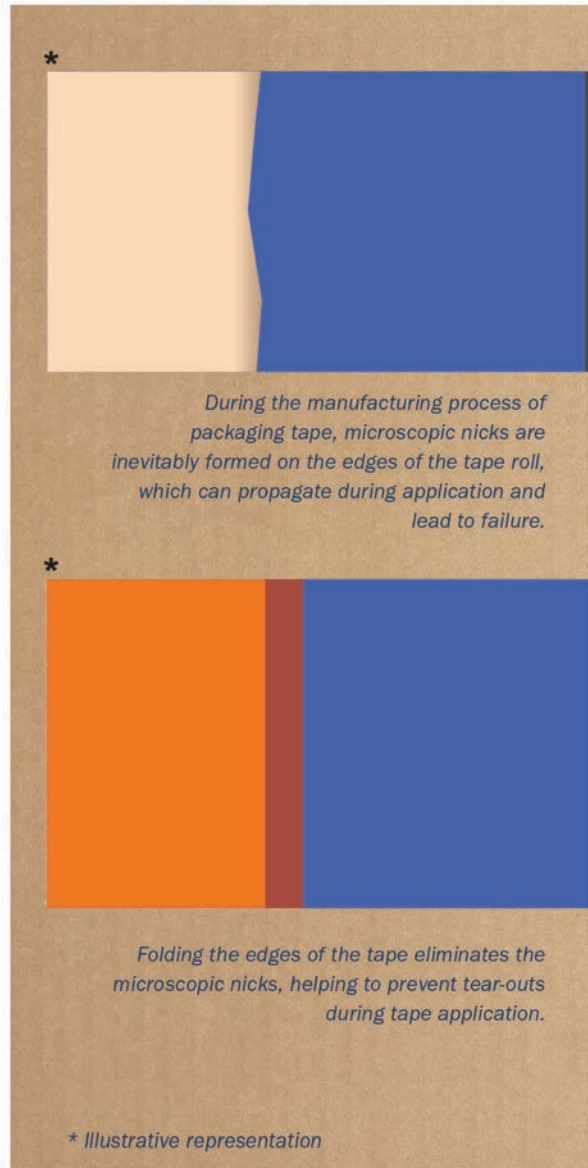
A second unfortunate result of using a knife during the unpacking process is personal injury due to cuts and lacerations. The costs associated with those injuries can be high.

Remember, too, that tape stretch may cause issues during processing, especially in situations in which overstretching has occurred during application. The tendency for the tape to revert to its original shape can force the adhesive to pull away from the carton's surface. But, by doubling the thickness of the tape edge, the potential for stretch is reduced, meaning less stress on the adhesive and less risk of flagging or lifting.

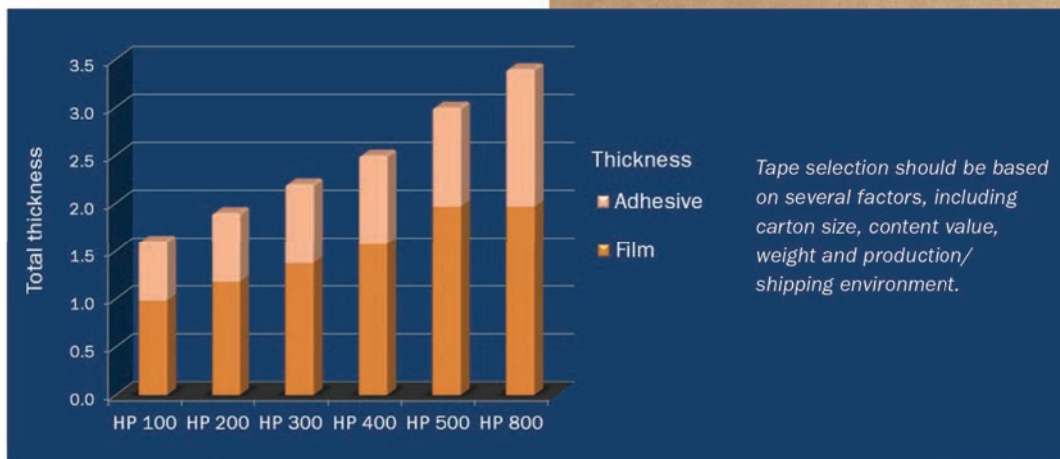
And, those tiny microscopic nicks created by the manufacturing process? They are eliminated. That means more uptime, fewer breakouts and less material waste – especially with a tape that runs good to the core.

INCREASES SAFETY

Folded-Edge Technology even benefits case recipients. If not careful, the most common way to open a box – using a knife, box cutter or other sharp



* Illustrative representation



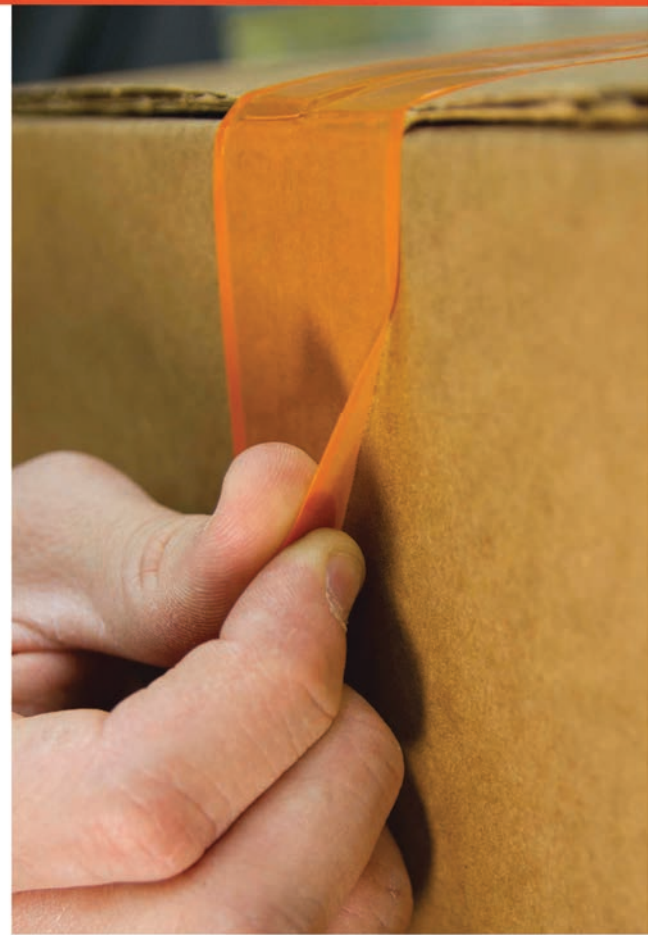
The Occupational Safety and Health Administration (OSHA) suggests that direct (workers' compensation payouts, healthcare) and indirect (wages paid to injured workers, lost time, time and money spent on worker replacement) costs related to a cut or laceration can be upwards of \$35,000.

With such high costs associated with using a knife, eliminating it from the equation is a welcome preventative measure. By folding the edges of the tape as it's applied, a secure, ready-to-open carton seal is created – one that doesn't require a knife or other sharp instrument to open.

Instead, there's a dry edge that allows the tape to be removed by hand, reducing the risk of product damage and worker injury due to knife cuts. It's a simple solution with countless benefits. Folded-Edge Technology,

available exclusively with ShurSEAL Packaging Solutions, protects products by delivering a strong and reliable case seal capable of withstanding the distribution network, profits by helping to keep the packaging line running at peak production, and people through an easy-to-open seal that doesn't require a knife.

Learn more about ShurSEAL Packaging Solutions, including the Folded-Edge feature, by calling (888) 442-TAPE or visiting ShurSEALSecure.com.



Fiber Tear
For Better Security



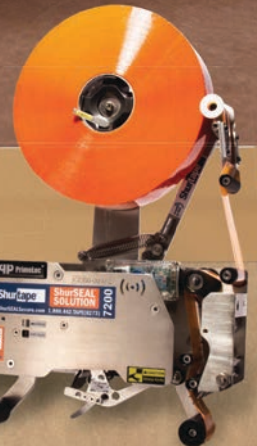
Wipe Down
For Stronger Seals



Aggressive Adhesive
For Highest Holding Power



Folded Edge
For No-Knife Opening



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