



## **Stretch Film Roping Provides Superior Results and Cost Savings for Unitizing Breathable or Heavy, Unstable Loads**

by

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*Roping pre-stretched film overcomes unique challenges of unitizing  
breathable organic products and heavy building materials*

Most pallet loads can be effectively and efficiently unitized by high performance stretch film machines. In fact, it has become standard practice for many industries worldwide which want to unitize and protect their pallet loads during transport. Some types of products, however, present unique challenges—such as organic products, building materials, and other heavy or unstable loads.

Organic products such as fresh-picked fruits and vegetables need to vent naturally-occurring gases during storage and transportation to preserve freshness and appearance. This breathability limits weight loss caused by product shriveling and helps ensure overall higher quality products from field to grocery. To maintain air flow, organic products are typically packed in vented cases or trays. The challenge comes with how to unitize full pallets of organic products in a way that maintains sufficient air flow and stability throughout storage and transport. Full wrapping with stretch film provides stability, but prevents free air flow. Alternative methods include application of mesh or netting, vented film or roped pre-stretched film. Each provides varying degrees of breathability and load stability. Only roped stretch film provides the combined benefits of optimum load

security and breathability, while delivering significant cost savings and ease of application.

Building materials, such as bricks and concrete blocks, require a method with significant holding power to maintain stability during transport, as well as one that protects products from chipping, cracking or breaking. Full wrapping with stretch film provides good protection from chipping and cracking, but requires significant amounts of film to secure a load. Alternatives include metal or plastic strapping, wire, and roped, pre-stretched film. Strapping and wire provide good strength, but have greater potential to cause product damage during shipping. Roped stretch film provides the necessary strength for load stability, security, and protection from damage, while delivering significant cost savings and ease of application.

### **Making a Choice—A Look at Unitizing Methods**

Let's take a closer look at unitizing organic products. Fresh products lose their value quickly as their appearance and quality decline. Protecting product investment and profits depend on what happens during packaging and shipment. The farther products travel, the more important breathability and stability become. Breathable, secure pallet wrapping is essential to protecting product value and investment.

Of the unitizing alternatives that provide breathability, the most practical is roped stretch film. Precisely roping stretch film as it exits the film carriage creates an extremely strong and elastic band that, when wrapped around the load, creates breathing spaces. Roping provides cost-effective open airflow throughout the load while maintaining and often increasing stability. Roping the film also increases overall strength of the stretch film, which can lead to fewer film breaks and an increase in productivity during production.

Mesh or netting provides the benefit of free airflow, but lacks the ability to pre stretch as much as conventional machine grade stretch wrap film. Netting is usually applied tightly using post-stretch/core brake carriages. This post-stretch method results in using a considerably larger amount of film and a significant reduction in overall load integrity.

Another significant drawback with netting is that, when removed, it tends to contract into balls and blow around the area, potentially becoming entangled in lift truck wheels and other equipment, causing costly damage.

Perforated polyethylene stretch film with cut or punched perforations provide the tension advantage of pre-stretched film and easy airflow. However, perforations—depending on their size—reduce the film’s holding power and frequently require more wrapping or a heavier gauge film. Because perforations comprise only a percentage of the film width, the level of breathability for perforated films is not as high as with roped film, which provides more open space for airflow.

On a cost-per-load basis, netting and perforated film can cost almost four times as much as roped regular pre-stretched wrap film.

A less common alternative is the application of clear stretch tape in a pattern that secures a pallet load while allowing airflow through it. The clear 1½-inch tape alternative does not offer the elasticity of pre-stretched film and as a result comparable holding pressure on the load. The volume of tape required for to sufficiently secure organic pallet loads drives cost higher.

The technique of roping standard stretch wrap film has been proven with multiple products to provide superior airflow and load stability while the avoiding potential higher total cost of using specialty films or tape. Roping with lighter gauge film than what is typically needed for standard pallet wrapping can further reduce costs and enable packers to standardize their film inventory.

### **How Roping Works**

Roping is the narrowing and concentrating of a web of standard stretch wrapping film into a tight strand, in essence a rope. It typically provides greater strength using less film, except in cases where the load consists of a large number of smaller cartons or items where the rope may only touch a fraction of the surface of the load. It is most often used to provide:

- breathability for fresh products by allowing airflow through the open space between ropes;
- rapid cooling of warm products to prevent condensation;

- greater holding power for unusually heavy loads such as concrete blocks or bricks.

There are several ways to create a rope from a full web of pre-stretched film, each involving a different application setup.

The most common method uses rollers at the top and bottom of the film web that push up and down against the web from their positions. This narrowing can range from a few inches at either edge to maximum reduction into a true rope of film, depending on user requirements for strength and tear resistance. The rollers can be adjusted and locked in place by hand, resulting in the film being roped at the same rate throughout wrapping, or they can be cylinder-activated and programmed to adjust between roping and full wrapping mode in the course of the wrap. This programmed method allows the wrapper to be used for either roping or full wrap, as needed. This is important in securing loads such as bricks and concrete blocks which require both holding power and protection from cracking or chipping.

A second method uses either two or three separate rolls of narrower film, or a blade on the film carriage that cuts the web into narrower webs as it passes, before being formed into a rope. These multiple narrowed ropes usually—depending on the pallet load—deliver more effective breathability, but require a dedicated film carriage setup.

In most cases, roping is applied in the same pattern as a full wrap. However, unique, need-specific applications are also possible. For example roping can be applied to create breathability and in an X-pattern to create added downward pressure on the load to better secure cases to the pallet. Two ten-inch rolls of film on a dedicated carriage can also be used to rope in a pattern that maximizes breathability and prevents bouncing during transportation.

Roping can be done by most automatic and semiautomatic wrappers and with a wide range of film gauges. Because roping increases the holding power of the film, it is usually possible to downgauge film size and achieve comparable load results while reducing material costs. It is a cost-effective option offered on many of the stretch wrapping machines from Orion Packaging Systems of Minnesota.

## **In Conclusion**

Where breathability and holding power are essential to protecting load value, roping is the preferred method. It combines maximum breathability, outstanding strength, and product protection with ease of application and removal at a lower total cost per pallet load than alternatives.

## **About Orion**

For more than 30 years, Orion Packaging has been providing its customers with durable and reliable stretch wrapping solutions that deliver industry leading prestretch capabilities and superior value. Orion offers a full product line of automatic and semi-automatic stretch wrapping solutions for almost any load containment need.

Orion is powered by Pro Mach, a leading provider of integrated packaging products and solutions for food, beverage, household goods, pharmaceutical, and other diverse consumer and industrial companies. For more information about Orion, call 800-333-6556 or 901-888-4170 or visit [www.orionpackaging.com](http://www.orionpackaging.com).

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