

# Stretch Wrap Alternatives, Reduction and Recovery

## Fact Sheet

Stretch wrap is a plastic film usually made from high density polyethylene (HDPE), low density polyethylene (LDPE), linear low density polyethylene (LLDPE), and/or polypropylene (PP) resins. Most often used to package products together for internal and external shipping, stretch wrap is typically generated in large quantities by warehouse/distribution centers, industrial plants, and large retail. Facilities currently landfilling large amounts of stretch wrap should consider waste reduction opportunities for a number of reasons, including avoided landfill disposal fees, reduced packaging/shipping costs and improved environmental performance of the facility.

Key steps to recovering stretch wrap begin with an assessment of its use in the facility, investigating alternatives and identifying recycling markets. Once these steps are completed, a collection and handling system may be designed and employee training may begin. Integral to management's support of the program is a determination of the program's costs and benefits.

### Assess Your Stretch Wrap Use

Examine all applications of stretch wrap in the facility. Determine the quantity and types of stretch wrap being used, i.e., HDPE, LLDPE, LDPE, PVC and/ or PP. Ask your supplier for data sheets on the film to be purchased.

Note the quality of stretch wrap in the facility. Are there paper or plastic labels attached to the wrap? Is the wrap clear or colored? Is it free of dirt and grease?

For each application, evaluate ways to reduce the amount of stretch wrap used in the facility. For example, stretch wrap machines wrap pallets tighter and with less material. Pallet wrappers also can be trained to optimize film use.

### Investigate Alternatives

- Rubber bands and plastic straps can be used to secure large products together and bind them to pallets. These items produce less waste by volume than stretch wrap. Another advantage is that rubber bands can be reused while PET and PP strapping can be recycled.
- Glue can be used by itself or with stretch wrap or bands. An adhesive can be used to decrease the amount of stretch wrap needed to secure a unit load. When glue is used to secure boxes together, stretch wrap or bands around the top layer of boxes are recommended to help secure the entire load. A light spray of non-toxic glue on the package prior to loading will secure products from lateral shifting during transport. Glue also can be sprayed directly on a pallet or slip-sheet to prevent the unit load from sliding or walking off the shipment platform. Products are easily separated when lifted vertically from the unit load, leaving no waste and no damage to the package or printing on the package. The glue does not interfere with the recycling of packaging such as plastics or cardboard.
- Reusable shipping containers such as plastic bins, totes, crates, or palletized containers can be used for internal and external transport. These containers eliminate the need for stretch wrap to secure the

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products to pallets and also offer more protection to the products being shipped. This protection leads to fewer damaged goods per shipment. Other advantages include easier handling and storage. Although initial costs of these containers usually are higher than single use containers, the average cost per trip of the container is dramatically lower.

- Work with vendors and customers to develop ways to reduce stretch wrap consumption. Over the years, some stretch wrap suppliers have created programs to collect used film from their customers. Companies that are not large generators of stretch wrap may find such a program to be the most convenient and economical option.



## Identify Markets

One of the first steps in creating a stretch wrap recycling program is finding a market that will handle or reclaim your recovered material. The American Plastics Council maintains a national database of post-consumer plastic handlers. The database can be accessed through a hot line: 1-800-243-5790.

Consider the following when surveying potential markets:

- Location. Market location can significantly affect the economics of a recycling program. Determine who pays for transportation. Keep in mind, the closer the market, the lower the transportation costs.
- Specifications. Learn the specifications of the stretch wrap required by each market. Important questions to ask are:
  1. Does the wrap have to be baled?
  2. What resins are accepted?
  3. Are plastic or paper labels allowed on wrap?
  4. Is ink printing on the wrap accepted?
  5. What are the specifications for bale size and strapping?
  6. What are the minimum or maximum load requirements?
  7. What is the current price offered, and how often does this change?
- Experience. Make sure the market is a well-established and reputable firm by requesting customer references. Ask how long the firm has been handling and/ or reclaiming stretch wrap. Find out if they have worked with a business like yours before and whether they are willing to provide any technical assistance, balers, collection containers, or educational materials.
- Cooperative Collection and Marketing. Small-to-medium sized businesses may find it difficult to produce enough stretch wrap waste to make recycling economically worthwhile or to attract a market. Facilities facing this dilemma may consider creating or joining a cooperative collection effort within their community. To initiate such a collection effort, contact stretch wrap recyclers to discuss the idea and determine their willingness to coordinate a cooperative collection operation in your area. Also, contact the county/city recycling coordinator for assistance in finding other small generators and setting up a local program.

## Design a Collection and Handling System

Because stretch wrap may come from different sources, it is important to notify suppliers and tell them about your recycling program. Explain the requirements and specifications your recycling market has established for recovery. Ask them to help by notifying you of any changes in the stretch wrap materials being used for shipment.

Gathering used stretch wrap in a clean container is a must. The American Plastics council suggests using a 42 x 42 x 42 double-wall or triple-wall cardboard Gaylord that typically holds 50 pounds of loose stretch wrap. Other options include roll carts and large plastic bags (bags should be of the same resin type as the stretch wrap being collected). If bags are used, they also may serve as pre-bale storage. The number of containers needed for collection will depend on the number of generation points and the method used for

storing accumulated material before baling (i.e., will containers be used for pre-baling storage or will materials be transferred to a holding area, freeing up the collection containers). Allocate enough space for all needed collection containers within the facility. Often markets require a full truckload of baled stretch wrap, so plan for space to store the bales until there is enough to meet the market requirement.

It is important that collection containers are clearly labeled **Stretch Wrap Only** and that employees understand the problem of contamination in the recycling process. Most recyclers will not accept more than two to five percent contamination. The most successful systems place containers adjacent to areas where the wrap is removed, for example, in the receiving area. Such placement tends to decrease the chances of contamination of the plastic from dirt, oils, and trash.

Personnel handling stretch wrap should be trained about specifics of the recycling program. Once the wrap is stripped from pallets, all labels that are not accepted should be removed, and the wrap should be placed immediately in the appropriate recycling container.

## Storage Required for Baling Stretch Wrap

### Storage of loose material before baling:

- ★ Loose stretch wrap is collected in Gaylord containers (42" cube).
- ★ A Gaylord container typically holds 50 lbs. of loose stretch wrap. Approximately 20 containers are required per bale of stretch wrap.
- ★ Each container requires 12.25 sq. ft. of floor space; 20 containers require 245 sq. ft.

### Storage of baled stretch wrap:

- ★ Typical bale weight is 900 – 1,200 lbs.; typical bale dimensions are 3' x 4' x 6'.
- ★ There are 38-42 bales per trailer truck.
- ★ Space required to store one truckload of bales, assuming bales are stacked two high, is 240 sq. ft.

To lower the costs of storage and transportation, stretch wrap should be baled. Most markets will only accept the material in the form of a bale. Facilities that already have a baler for cardboard or plastic can use the same machine to bale stretch wrap. For those facilities that have not invested in a baler, the typical costs for a small vertical baler are between \$7,000 and \$10,000 (a used baler may cost less). Larger capacity horizontal balers used for large multi-material recycling programs range from \$12,000 to \$200,000. Bale sizes and weights vary between balers. Some balers produce a 2 x 3 x 4 bale weighing 300 pounds while other balers produce a 3 x 4 x 6 bale weighing 1,000 pounds. Check with your stretch wrap market about requirements on bale size and weight to determine what baler is appropriate for your operation. To ensure bale integrity, four or five wires should be used to wrap the bale. Once baled, the stretch wrap should be stored indoors on pallets or concrete pads to keep dry and clean. If bales are stored outside, they should be placed on concrete pads and covered with tarpaulins to prevent ultraviolet degradation and moisture accumulation.

## Employee Training

Employees determine the success of a stretch wrap recycling program. All employees who deal with stretch wrap should be trained on the specifics of the facility's program and their role in its success. One hour training every six months should be allocated for each employee involved in the recycling program. Also to be included in the costs of training are instructional signs that illustrate and remind employees of the stretch wrap recycling effort. The cost per year for signs depends largely on how many recovery areas exist in the facility. An average cost of \$170 per year for signage can be used in calculating the net benefits of the recycling program (calculated by assuming \$17 per sign, needing 10 signs). The following points are important to remember during employee training.



- Emphasize the importance of removing string, tape and paper labels, as they are serious contaminants.
- Discourage the use of recycling containers as trash receptacles.
- Understand that continuous employee training is the key to a successful recycling program.

## Stretch Wrap Economics

Stretch wrap recycling presents opportunities for companies to save energy, preserve resources, lower disposal costs, and generate revenue. A well-designed program can produce large economic benefits, while a poorly run program will result in labor inefficiencies and low quality recovered material. Those facilities with low employee turnover will have lower training costs.

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## Resources

### American Plastics Council

1300 Wilson Blvd.  
Suite 800

Arlington, VA 22209  
1-800-243-5790

[www.plasticsresource.com](http://www.plasticsresource.com)

APC provides assistance with plastics recycling research, access to a database of film recyclers and reclaimers and has published two reports: *Understanding Plastic Film: Its Uses, Benefits and Waste Management Options*, and **Stretch Wrap Recycling: A How-To Guide**.

### Film buyers and Recycled Product Manufacturers

#### AERT, Inc.

801 N Jefferson  
Springdale, AR 72764  
(501) 750-1299

#### Trex Company, LLC

20 S. Cameron Street  
Winchester, Virginia 22601  
[www.trex.com](http://www.trex.com)

#### U.S. Plastic Lumber / Earth Care Products

2300 Glades Road - Suite 440 W  
Boca Raton, Florida 33431  
800-65-EARTH

#### Boise Cascade / Re-Sourcing Associates, Inc. Film Recycling Program

21327 88 th Avenue South  
Kent, Washington 98031  
[www.rsarecycle.com](http://www.rsarecycle.com)

## Worksheet: Estimating Handling and Processing Costs

The following worksheet provides a format and example for calculating the economic benefits of recovering stretch film. The example assumes recovery of 200,000 lbs. of stretch wrap per year.

	Per Pound	Annual
<b>Revenues</b>	\$ .035	\$7,000
<b>Recovery Costs</b>		
Employee training	\$.005	\$1,000
Special containers	\$.004	\$750
Baling labor and wire/strapping	\$.008	\$1,500
Labor costs*	<u>\$.010</u>	<u>\$2,000</u>
<b>Subtotal</b>	\$ .026	\$5,250
<b>Net Revenue</b> (Revenue – Recovery Costs)	\$ .009	\$1,750
<b>Avoided Disposal Savings</b>		
Hauling costs:		
40-cu-yd compactor container \$100/pull – 33 pulls per year (1 cu yd compacted film + 150 lbs.)	\$ .017	\$3,300
Tipping fee \$30/ton	<u>\$.015</u>	<u>\$3,000</u>
<b>Subtotal</b>	\$ .032	\$6,300
<b>Net Benefit</b> (Net Revenues + Avoided Costs)	\$ .040	\$8,050

\* Extra handling plus transportation from receiving dock to baler.  
Will vary depending on the program.

From the North Carolina Department of Environment and Natural Resources