



# Pallet Recycling

## A Guide for Pallet Generators

# FACT SHEET

### BACKGROUND

In 2005, North Carolina enacted [House Bill 1465](#), which bans the disposal of wooden pallets in municipal solid waste landfills by Oct. 1, 2009. Pallets may be sent to construction and demolition landfills if they are generated as C&D waste (as defined by the N.C. Solid Waste Management Rule 15A NCAC 13B .0532). Pallets from an industry other than construction of homes and buildings would not be allowed in any landfill.

The legislation recognizes many management methods are available to pallet generators other than disposal. This fact sheet is designed to give pallet generators information on options that will help comply with the disposal ban. In many cases, using these options may save money for pallet generators not only in avoided disposal costs, but also in the purchase and use of pallets and related packaging.

### ASSESS PALLET USE

A good first step for generators of wooden pallets is to determine the kinds and amounts of pallets used or received. Performing the following tasks will provide valuable information:

- Compile a list of suppliers who deliver products or materials to your facility. Record how many pallets are received in a week or month's time, including sizes and types received.
- Determine how much it costs to manage pallets as disposable items, including rental or purchase fees of any disposal containers, hauling charges and any related disposal fees.
- Determine the types and amounts of pallets used internally or for shipping. How many are common sizes (e.g., 48" x 40")? Are some custom sizes? How much do you pay for pallets and who are your suppliers? Do the pallets on which you receive supplies and materials match ones you use internally or to ship out products or materials?
- Determine the cost of any pallets purchased for material handling or shipping. What types of pallets are used? Is there flexibility in the kinds of pallets used?

In short, an inventory of pallets received, used and shipped, along with a sense of the costs associated with pallet use and disposal, will help in choosing the management options discussed below.

### STANDARDIZE PALLET SIZE

Some pallets are more recyclable and reusable than others and are, therefore, more valuable. Pallet generators should assess and possibly be prepared to change the kinds of pallets they receive or utilize. Pallet recycling companies are good sources of information regarding the most desirable type of pallets. Generally, the most attractive is a standard "GMA 48 x 40 pallet" – see the [Grocery Manufacturer Association Pallet Resource Center](#) Web site.

N.C. DIVISION  
OF POLLUTION  
PREVENTION AND  
ENVIRONMENTAL  
ASSISTANCE

1639 Mail Service Center  
Raleigh, NC 27699-1639

(919) 715-6500  
(800) 763-0136

---

Standardizing pallet sizes promotes reuse and recycling. Work with vendors to supply incoming materials on pallets your company can use to ship out its final products. A change in pallet size may require modifications to racking, storage facilities or product orientation, but the savings may be well worth it. Using one standard size will reduce pallet inventory needed and labor needed for sorting different pallet sizes.

## **USE HIGH-QUALITY PALLETS AND REPAIR IN-HOUSE**

High-quality pallets are easier to repair and more likely to be repaired and reused repeatedly. The cost per trip of higher quality pallets tends to be lower than cheap pallets because high-quality pallets can withstand more trips before repair is needed.

Companies that use high-quality rebuildable pallets can also save as much as \$3 to \$4 per pallet by repairing them in-house. Dedicated pallet handlers can be trained to provide minor or major repairs to broken pallets for a fraction of the cost of buying new ones. Companies that use large quantities of pallets should analyze whether simple repair operations can be established that help avoid disposal and save the costs of buying new pallets.

## **SMALL GENERATOR TIPS**

If your business generates only a few pallets, and your local government does not have a pallet recycling program or a private pallet recycler is unwilling to pick-up only a few pallets, here are some ideas:

➤ **Band Together With Other Small Businesses**

If you are located in an office park or strip mall, ask other neighboring businesses if they generate pallets. If businesses in a condensed area collectively generate enough pallets, a pallet recycler may become interested in providing a collecting the pallets.

➤ **Piggyback With Large Businesses**

If there is a large business nearby that contracts with a pallet recycler, ask if you can incorporate your small quantity of pallets with theirs.

➤ **Contact A ‘Pallet Jockey’**

Almost every community has a small quantity pallet collection infrastructure. Often called “pallet jockeys” or “pallet scavengers,” these entrepreneurs can be seen with loads of pallets strapped to their pick-up trucks. Since pallet jockeys sell the collected pallets to large pallet recyclers, large pallet recyclers may be able to recommend a pallet jockey or two that can assist you. Call pallet recyclers as well as [local government contacts](#) to inquire about pallet jockeys in your area.

➤ **Post A ‘FREE’ Sign**

Pallets can be made into anything from firewood and compost bins to chicken coops and garden planters. It’s really up to the creator. You can also post your free wooden pallets on Craigslist or on a local gardening listserv or even in a classified ad in the local newspaper. It should be noted that some pallets are not suitable for use as firewood in residential settings.

## **FIND A RECYCLING MARKET FOR WOODEN PALLETS**

Most pallet recycling companies are interested primarily in receiving immediately reusable or repairable pallets. These pallets represent the highest value for pallet recyclers, which is why they give those companies that generate them the

---

best deal. Many pallet recyclers also work to restore broken pallets to working condition to get as much value as they can from the product.

Recyclers may pay for pallets, take them for free, or charge to take them, depending upon the amount and kinds available from any given generator. Large supplies of GMA pallets will generally yield revenues to the generator, whereas small supplies of odd-sized pallets will cost the most to recycle.

Although it can be difficult to do so, pallet generators are well served by improving the attractiveness of their pallet stream to potential recyclers by standardizing sizes, moving to more desirable types of pallets and working to keep pallets in good working order.

If pallets are not suitable for reuse or repair, they can be processed for other uses. This processing usually entails grinding the pallets for use as landscape mulch, playground cushion bedding, animal bedding, compost and soil amendments or biomass fuel. Many companies offering pallet repair services are also capable of this type of processing. In addition to companies specifically involved in pallet recycling, other types of recycling firms such as commercial composters, wood waste grinders and construction waste recyclers are possible outlets for discarded pallets.

North Carolina keeps an extensive list of [pallet recyclers](#) and other companies able to accept and manage wooden pallets on its searchable, online [Recycling Markets Directory](#).

In addition, some local governments (counties and municipalities) may be able to offer other assistance and possibly a local drop-off location for wooden pallets. It is an important step for pallet generators to contact their [local solid waste and recycling office](#) to see what help or services may be available.

## **ALTERNATIVES TO WOODEN PALLETS**

There are a wide variety of alternatives to wooden pallets available, including the use of slip sheets, reusable pallets, corrugated paperboard pallets and rolling carts. These products are usually tailored to a company's specific needs and are often reusable, recyclable and easy to clean.

### **Slip Sheets**

One alternative to wooden pallets is the use of "slip sheets." Slip sheets are flat sheets, 1/32" to 1/16" thick, manufactured from corrugated, solid fiber or plastic (usually polypropylene or high density polyethylene). Each sheet has one to four "tabs" that run the length of the sheet and are bent upward for grabbing by push/pull attachments used on retrofitted forklifts. They may be custom-designed with alterable features including thickness, size, number of tabs, and coatings for tensile strength, slip resistance and moisture resistance. The California Integrated Waste Management Board has produced a list of [Slip Sheet Manufacturers](#). A simple Web search may also yield more leads for slip sheet vendors.

Slip sheets may be best used in a warehouse or distribution center. Slip sheets are lighter and less bulky, use less storage space and are inexpensive enough for one-time use to avoid the need to keep track of pallets. However, switching to slip sheets could entail a large start-up cost as they require a push/pull forklift attachment that can cost more than \$5,000. If used for external deliveries, customers must also be in a position to handle slip sheets instead of pallets, including having push/pull attachments.

### **Reusable Containers**

Reusable containers are another possible alternative that can be employed to avoid the use and generation of wooden pallets. They can be manufactured from plastic, corrugated, solid fiber or metal. The strength, durability and cleanliness of reusable containers depend upon the material used. Containers can be ordered to fit your needs, including size, shape, color, partitions and reusable cushioning systems. Features offered include being stackable, nestable and collapsible for convenient storage and return.

---

Despite higher initial costs, these pallets may save money in the long run. According to the Purdue University AGVS Research Group, the average life of these pallets is 100 trips, where one trip is defined as five handlings. These pallets usually meet both USDA and FDA standards for pharmaceutical, chemical, grocery and food processing operations as they can be sanitized and steam cleaned. They also exhibit low breakage rates and work well with automated material handling systems. Product damage is lowered and employee safety is increased when using these pallets because they have no nails, staples or broken boards.

Plastic, composite and metal pallets are best used in a closed loop or internal use system where shipping is restricted to moving goods within or between specified plants and facilities. Closed-loop systems operate under one or more of the following conditions: short distance shipments, frequent deliveries to the same customer, delivery to a limited number of customers and/or delivering with company-owned vehicles.

#### Plastic Pallets

Plastic pallets are created in three general forms. Plastic lumber pallets resemble the wooden pallet with the exception that the boards are made from extruded plastic. Structural foam and thermoformed pallets are distinctive in style as they are one solid piece of plastic. These pallets have no nails, screws or staples, thus reducing product damage and employee injuries. They often offer a grooved deck, a raised lip on the outer edges and hollow feet that provide nesting capacities saving storage space. Some plastic pallet manufacturers have worked to create a rackable structural foam or thermoformed pallet. Heat and weight may prove a detriment to these types of pallets if they bend under open racking conditions.

#### Composite Pallets

Composite pallets, as their name states, are made of two or more distinct materials. Some are made from a combination of plastics while others are extrusions of sawdust, wood shavings and recycled plastics. Composite pallets have high loading capacities and racking ability like wooden pallets, but are easily cleaned like plastic pallets.

#### Metal Pallets

Metal pallets generally are made of aluminum or stainless steel. They are most often used in applications where the pallets do not leave a facility. Metal pallets are the strongest and most durable pallets on the market. They are usually heavier than their wooden counterparts and have a much higher initial cost. Metal pallets are most often used in a manufacturing setting where a pallet is needed to withhold heavy racking weights, high temperatures, the rigors of conveyor systems and cleanliness standards set by the FDA and USDA.

### **Corrugated Paperboard Pallets**

A small percentage of manufactured pallets are made from corrugated paper or pressed wood composites. Reasons for using corrugated pallets include light weight, recycling ease and strength. Some corrugated pallets boast static load capacities as heavy as 30,000 pounds. Corrugated pallets are also able to meet the special dimensions and disposal needs for shipping goods to Europe. Some European customers request corrugated pallets because they can be recycled with corrugated boxes. For those interested in completing the loop and buying recycled, corrugated pallets are typically manufactured from recycled paper.

However, there are drawbacks to corrugated pallets. First, they can be relatively expensive, especially when used only once. Corrugated pallets are not as durable as wooden, plastic or metal pallets, and products often must be stacked in specified ways for the pallet to hold the load. Furthermore, exposure to moisture will damage corrugated pallets possibly causing pallet failure.

### **Rolling Carts**

Rolling carts usually made from heavy duty plastic or metal can be tailored to fit odd shaped products with considerably less protective packaging. Rolling carts tend to save labor and reduce injuries, as they are easier to work with than pallets. Savings on labor, injuries and protective packaging can often pay for these carts within a year.

---

## OTHER PALLET MANAGEMENT OPTIONS

In addition to pallet reduction and recycling options discussed above, pallet generators may also consider some of the alternative management methods described below.

### Third-Party Management

One kind of recycling alternative for pallet generators is use of third-party pallet management services. Third-party pallet management companies and their networks of individual pallet companies can provide an efficient way to manage used pallets and source pallets for use.

In essence, third-party management companies rent pallets to a user on a per-trip basis. The management company tracks pallets throughout their usage and retrieves them for reuse or refurbishing. Third-party systems often use higher quality pallets, increasing the trips per pallet an average of 20 to 40 times compared to five times when managed by the user. This management method can optimize reuse and recycling and may save the pallet user money and time.

### Pallet Exchanges

One way to handle excess pallets is through exchanges with other pallet users. These arrangements can be made by the businesses themselves or can be facilitated by local government recycling coordinators and local groups such as a chamber of commerce. Another possibility is finding a sister facility that can exchange pallets with your facility. Exchanges may reduce costs for pallet management and purchase, and may work especially well when participating businesses do not require top-quality pallets. Generators can also make use of an online waste exchange, [N.C. WasteTrader](#) to help find home for their wooden pallets.

## CALCULATE COST SAVINGS

Companies can experience considerable costs in the storage, transportation and disposal of discarded pallets. Often these costs take the form of waste container rental, hauling fees and tipping fees charged by waste management companies, all of which may be able to be reduced substantially when a company eliminates pallet use or pursues recycling options. Sometimes recycling options may entail their own costs, especially if a company has many unusual sizes or types of pallets. It is therefore important for pallet generators to closely evaluate their waste management services and charges, and to take advantage of cost savings on that end if reduction, reuse and recycling options are implemented.

## OTHER PALLET RESOURCES

Minnesota Office of Environmental Assistance posts a [Management Options for Wooden Pallets](#) fact sheet and a [Reusable Transport Packaging Directory](#).

[California Integrated Waste Management Board](#) hosts a Web site with useful information about wood packaging, including pallets.

[National Wooden Pallet and Container Association](#) is a trade association for manufacturers, recyclers and distributors of pallets, containers and reels.



The North Carolina Division of Pollution Prevention and Environmental Assistance provides free, non-regulatory technical assistance and education on methods to eliminate, reduce, or recycle wastes before they become pollutants or require disposal. Telephone DPPEA at (919) 715-6500 or (800) 763-0136 for assistance with issues in this fact sheet or any of your waste reduction concerns.