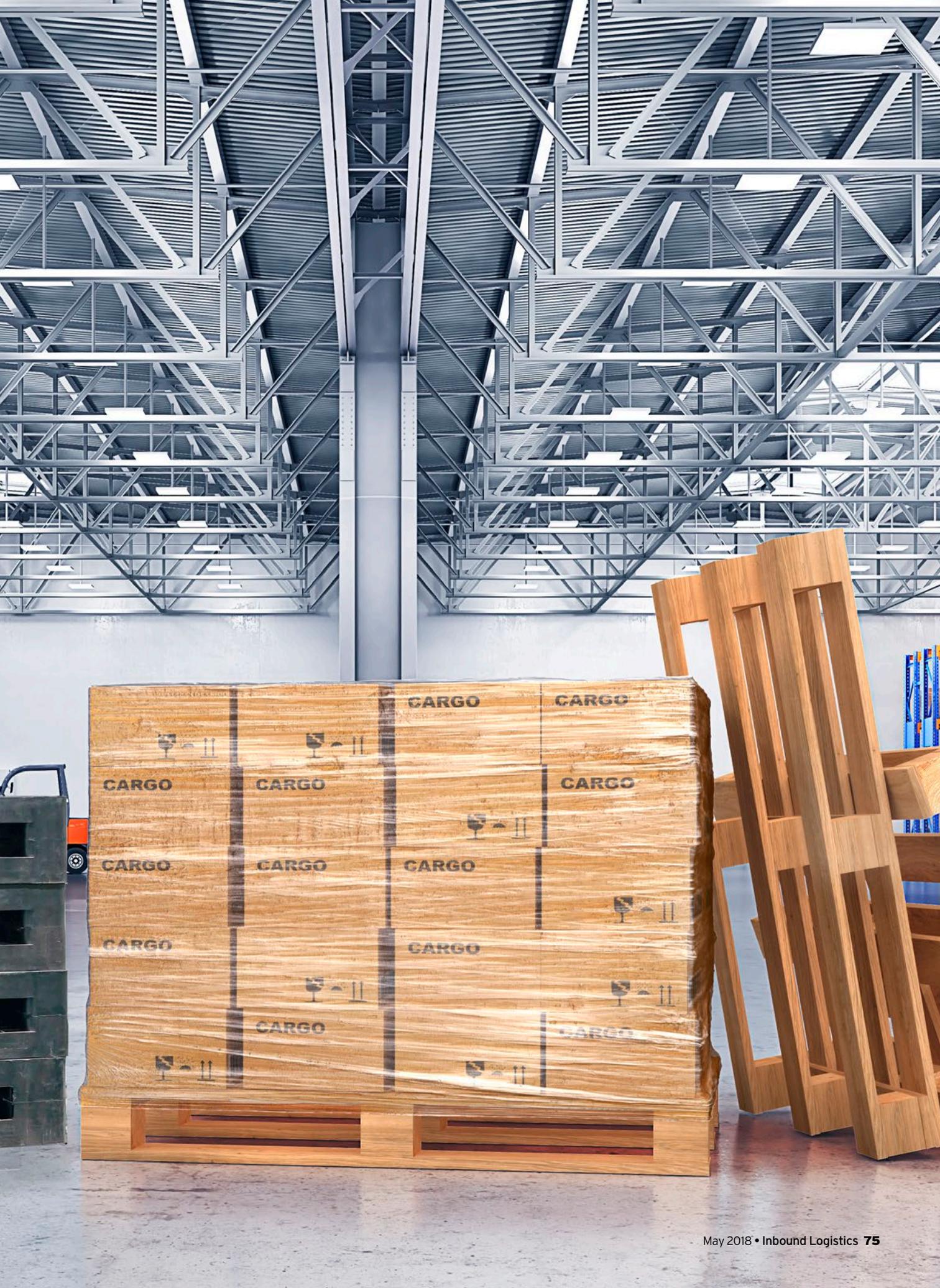


PALLETS: BACKBONE OF THE WAREHOUSE

Wood or plastic? Lease or purchase?
Whatever your operations need, there's a
pallet provider ready to supply it.



Think of pallets like the tires on your car. Pallets are where the rubber meets the road, the point of contact between shipments and the various transportation modes in the global supply chain.

Pallets are so common they're practically invisible, yet without them, global commerce would run as well as a car without tires.

Pallets are the primary interface of a unit load. They protect the product, absorb the stresses, hold the weight, encounter fork truck impacts, and safeguard goods traveling through the supply chain. When you consider all they are expected to do, you will conclude they have a tremendous amount of influence on the outcome of a shipment.

Pallets are the first line of defense for ensuring products reach their

destination in the same condition as when they left the shipper. Higher-quality pallets allow a higher volume of products per shipment, reduce the amount of product lost to damages or contamination, prevent worker injury from overloaded or unbalanced shipments, and reduce expenses such as fuel costs.

"Too many shippers focus on the pallet price rather than developing a comprehensive unit load strategy based on the requirements of their specific needs. The late Rodney Dangerfield might have said, 'Pallets, they get no respect,'" says Gary Sharon, vice

president of Vienna, Ohio-based pallet provider Litco International, which offers pallet leasing, management, removal, and recycling services.

Rather than choosing a pallet based solely on the lowest price, shippers should select a pallet that meets the need for high stiffness, proper strength and size, durability, cleanliness, low weight, and low moisture content.

"When you consider the importance of the pallet to protect the product, it seems odd to me that many shippers purchase pallets based solely on the lowest price," he says. "The lowest-cost pallet's strength and functionality may not match their specific product protection needs."

More than 1.8 billion pallets are in service in the United States each day, 93 percent of them made from wood, according to the National Wood Pallet & Container Association. In Europe,

A Single Sourcing Option for Pallets

Managing pallet systems effectively can improve supply chain efficiency and economy. Glenn Meeks, director of pallet operations at South Plainfield, New Jersey-based Bettaway Transportation Logistics and Pallet Systems, discusses the critical role pallets play.

IL: WHAT ROLE DO PALLETS PLAY IN TODAY'S SUPPLY CHAIN?

Our industry motto is, "Pallets Move the World." This remains true today and in the foreseeable future. Pallets are a highly configurable platform that vastly improves efficiency in the supply chain. Also, in today's supply chain, technologies available within and around the pallet allow track and trace, chain of custody, and environment recording.

IL: HOW DOES THE PALLET MANAGEMENT SERVICE WORK? WHAT ADVANTAGES DOES IT OFFER SHIPPERS?

Pallet management as a program works best because it extends shipper capabilities by improving pallet quality, service, and cost re-capture within the supply chain. Quality assurance programs implemented in conjunction with user goals improve quality. Use of a widely available network of pallet depots that can service particular regions of the country improves service, and costs are re-captured through novel repair and return programs that positively impact the cost per pallet vs. the cost per pallet trip.



IL: CAN PALLETS BE CUSTOMIZED FOR SPECIFIC APPLICATIONS?

Yes. Pallets are often made-to-order based on the item or unit load being transported. Also, they can incorporate design elements that are specific to the type of transportation and supply chain they will be moving through (ocean, rail, truck, air). The industry uses specialized software to design and create pallet specifications to meet the needs of pallet users.

IL: WHAT DO YOU HEAR FROM CUSTOMERS ABOUT WHY THEY CHOOSE BETTAWAY OVER OTHER OPTIONS?

Our ability to service customers nationally is a strong value add in our portfolio. Additionally, we can create audit programs and implement them on the customer's behalf. We provide a single sourcing option for companies with multiple facilities spread throughout the United States and Canada.

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Driving Automation Efficiency

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There are more than 40 areas of savings with iGPS plastic pallets – the most comprehensive pallet solution for driving down your total cost of business. More lightweight, hygienic, sustainable and durable than wood alternatives, they offer remarkable efficiency and uniformity, and reduce transport costs, product damage and equipment downtime. That's why the unique iGPS Plastic Pallet Pooling System provides cutting edge, global supply chain solutions for some of the leading companies and manufacturers in the world.



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some three billion wood pallets are in circulation.

Pallets are ubiquitous in the supply chain sector, so any changes in the way they work may ripple through the entire shipping process.

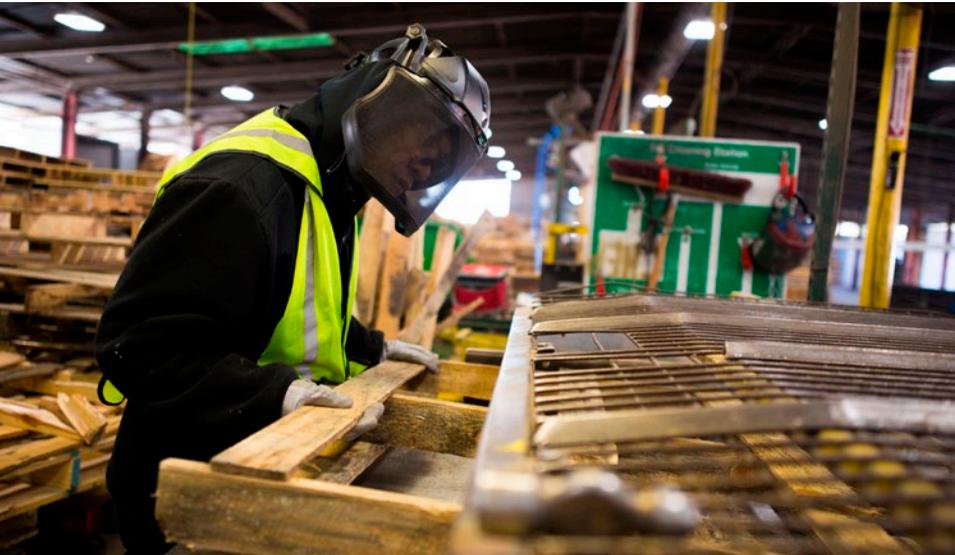
Since pallets have been the backbone of the logistics sector for generations, what possibly could be new? Quite a lot, it turns out.

PALLETS AS A SERVICE

“X as a service” has been a big trend—from Software as a Service to ride-sharing apps such as Uber that offer transportation on demand. Companies such as 48forty Solutions, ORBIS Corporation, iGPS, and Bettaway Transportation Logistics and Pallet Systems, offer pallet management services that can be considered “pallets as a service.”

Over the years, shippers have transitioned from basic pallet procurement and retrieval to looking for resources to manage pallets as an integral part of the supply chain. While leasing and pool programs are still popular options, and purchasing pallets outright and managing them in-house remains a common practice, a growing number of shippers outsource some or all of their pallet operations to a third-party provider.

“Fifteen years ago, what else was



48forty Solutions, a pallet management company, offers an end-to-end solution to shippers, including new, custom pallets, pallet supply and retrieval, on-site services, and packaging materials.

Pallets 101

A quick primer to get you in the loop about pallets.

MATERIALS

Lumber: The majority of pallets are made of lumber because it's strong and can be repaired.

Plastic: This durable option, often used for food and pharmaceutical products, is most cost effective in closed-loop shipping situations.

Metal: Steel is often used for extremely heavy freight. Both steel and aluminum are often used when there's concern about product contamination or fire.

TERMS

Stringer pallet: This type has a strip of wood—a “stringer”—between the unit's top and bottom decks. The decks are attached to the stringers. Notches are cut into the stringers for forklift entry.

Block pallet: The top and deck bottom boards are attached to blocks of wood—short supporting legs—instead of stringers.

2-way and 4-way: With a 2-way pallet, a forklift can only enter the pallet from two directions. In a stringer pallet without notches, the forklift can only enter from the two sides without stringers. Block pallets are 4-way, allowing forklift entry from all four sides.

SIZES

While custom sizes are an option, pallets are typically offered in two sizes:

GMA: The standard established by the Grocery Manufacturers Association (GMA) has a 48 inches by 40 inches surface.

Half pallet: Suitable for smaller retail spaces, half pallets are 48 inches by 20 inches on the surface.



Meet a plastic pallet more durable than wood that handles repeated use under even the harshest conditions. In fact, ORBIS® reusable pallets can complete up to 200 cycles without failure, compared with an average of just 11 for wood pallets.* Make the choice today to refine your pallet with ORBIS.

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*In FasTrack testing completed at Virginia Tech, using the 40 x 48 RackoCell® pallet.

there to consider besides specs and cost?" says Kyle Otting, CEO of Atlanta-based 48forty Solutions, a recycled pallet management company. "But as supply chains evolved into ever more complex networks, the efficient management of pallet programs has become impactful to the bottom line and at the same time, more complicated than ever."

A crucial step in developing a pallet management system is an audit of the shipper's operations. Simply replicating types and number of pallets that purchasing records say are being used could lead to confusion.

"We need to understand who our customers' customers are, what they're shipping and where, and how their operation functions," says Hillary Femal, vice president of sales and marketing for 48forty. "What's happening at each facility, how pallets are used, and the spec of the pallets being used are often vastly different than what corporate procurement has on record."

As part of 48forty's "as a service" mantra, shippers can track their pallet management online. With the *PalTrax* app, 48forty customers can place order or retrieval requests, run reports, and

view invoices and bills of lading for multiple locations using their desktop computer or mobile device 24/7.

"This transparency and visibility is a huge advantage for our customers; they have all the information they need anytime, anywhere," says Femal.

FINDING THE RIGHT PALLET SOLUTION

"Companies have to do what makes sense for them, and sometimes it comes down to whether the company wants to invest capital upfront for pallets or use a leasing program instead," says Ryan Roessler, plastic pallets product manager for Oconomowoc, Wisconsin-based ORBIS Corporation, which provides reusable plastic pallets, totes, dunnage, and bulk systems.

Some pallet types are not suited for rental or lease pallet pools but are used for one-way and export shipping situations.

For example, Litco's engineered molded wood pallets are designed and priced to use in one-way and export shipping. They are not repairable when damaged; therefore they are not typically used in pallet rental and lease programs.

However, they are rated for limited

reuse and can be reused several times at a very low cost per trip, especially when they are employed in a captive, or closed-loop, system by individual companies that have the ability to retrieve them and want to own their pallets, Sharon says.

"Litco's engineered molded wood pallets reduce the cost of retrieval in closed-loop systems because they are nestable; up to 50 pallets fit in a 7-foot-high stack, reducing the shipping cost of retrieval by more than half when compared to other types of pallets," Sharon says.

A SUITE OF SERVICES

Orlando, Florida-based iGPS plastic pallets have developed a unique niche, being one of the only Grocery Manufacturers Association (GMA)-sized plastic pallets capable of withstanding rental pool service, says iGPS CEO Jeff Liebesman.

Once a retailer has finished using plastic pallets they can be sent directly back to the shipper, as opposed to wooden pallets that may have to return to the pool for repair first.

"That saves at least one transport leg and associated labor, directly reducing total cost of business," Liebesman says.

In the rental pool, iGPS manages pallet delivery, recovery, and upkeep, maintaining compliant quality pallets throughout the cycle.

"It's no longer enough to simply provide pallets; for companies to get the most out of pallets requires a suite of services—process analysis, shipment tracking, regulatory benefits, to name a few," Liebesman says. "Without iGPS's service, our customers would pay for



The durability of iGPS plastic pallets helps manufacturers and retailers reduce product damage costs.

Same service. New name.

CHEP Recycled Pallet Solutions is now 48forty Solutions. Though the name has changed, the reliable, end-to-end solutions remain the same. And we're still North America's largest recycling network. From the biggest retailers and manufacturers to small family businesses, 48forty simplifies pallet management. Every time.

48
FORTY
SOLUTIONS

Pallet Management Made Simple™

unnecessary transport and procurement of pallets between use and recovery as well as incur costs arising from damaged pallets.”

Wood pallets are still king, holding about a 90-percent market share. But other materials, including engineered wood, plastic, steel, and corrugated paper are gaining ground for specialized uses.

Much of the automotive industry has transitioned to plastic or metal options. A similar switch is underway in food processing as plastic units are replacing wood for both inbound and outbound moves.

“Today a lot of inbound ingredients come in on wood pallets,” Roessler says. “So food processors are working upstream to convert to a more sustainable, more hygienic, more consistently sized solution.”

PRECISION PALLETS

Consistent pallet size is critical as more automated systems are integrated into warehouses and distribution centers. Wood pallets may vary slightly in dimension, especially those that have been extensively repaired. Plastic, steel, and engineered wood pallets typically maintain the designed dimensions across thousands of units. Sizing is vital in operations that employ automated guided vehicles, storage and retrieval systems, and other technology.

“With laser eyes and motion detection systems it’s critical to be consistent on every pallet,” Roessler says.

The consistent uniformity in size, shape, and weight of iGPS plastic pallets throughout the supply

chain supports automation technology. Additionally, all iGPS pallets have RFID tags.

“The reliability of the iGPS pallet specification makes them a far better fit than wood for companies investing in automation or robotics,” Liebesman says.

KEEPING IT CLEAN

Sanitation is another issue. Food and pharmaceutical companies must be diligent about using pallets free of mold, insects, and other contaminants to maintain sanitation from farm or factory to the dinner table and medicine chest.

Shippers are turning to other types of pallets to improve cleanliness in warehouses and retail stores. One retailer uses several hundred thousand plastic pallets per month to transfer order pick loads in addition to actual shipments, Liebesman says.

Shippers are coming to value other aspects of non-wood pallets such as reducing customers’ need to clean up the accumulations of wood debris and loose nails that are unavoidable with wood pallets, across the floors of both warehouses and retail stores.

“It is difficult to remain competitive, especially in high-risk industries with easily damaged products like food or pharmaceuticals, so customers are seizing on any and all cost-saving measures we offer and employing them wherever they can,” Liebesman says.

For example, a dairy products manufacturer turning products such as yogurt and sour cream is moving from wood pallets to plastic to improve productivity, Roessler

notes. While using wood pallets, the operators would shut down the line once a week to clean up the sawdust and pallet remnants.

“It would take almost a full day of downtime to clean all the equipment,” he says. “Cleanliness is important, but they also gain the benefits of eliminating costly plant downtime.”

READY FOR DISPLAY

Retail-ready floor displays reduce the number of touches necessary to move product from distribution center to the store aisle. To keep pace with the increasing demand for these displays, shippers can select from pallet base options that include Litco’s engineered molded wood, conventional wood, corrugated paper, and plastic.

“Display makers prefer to use Litco’s engineered molded wood pallets as a base because they are easy to assemble and durable enough to be used as both the shipping pallet and the base for the bottom of the display,” Sharon says.

Retailers like them because they are safer around workers and consumers. They do not have bottom boards that create “trip-points” or nails or staples that can cause injuries. Litco’s pallets are also easier to use because the design allows for smoother entry and movability with hand trucks. “They are a neutral color and won’t distract from the focal points on the display graphics,” Sharon says.

CUSTOMIZED USES

Some retail chains are moving to smaller footprint stores, making standard-size pallets a tight squeeze for stocking shelves or merchandising. Plastic pallet suppliers such as ORBIS have developed smaller plastic pallets with wheels that lock in place. Stock on smaller pallets can move in smaller trailers and transition from the DC to the floor without extra handling.

While many standard models meet most packaging needs, pallets can be customized to some extent, including a unique size or shape to fit a specific product. Bespoke designs generally require high volumes to be cost effective. Pallets are offered in a



Litco's engineered molded wood pallets are made of pre- and post-consumer wood waste and resin. They have been certified by the U.S. Department of Agriculture as BioPreferred and certified sustainable by MBDC: Cradle to Cradle® Assessment and Leadership.

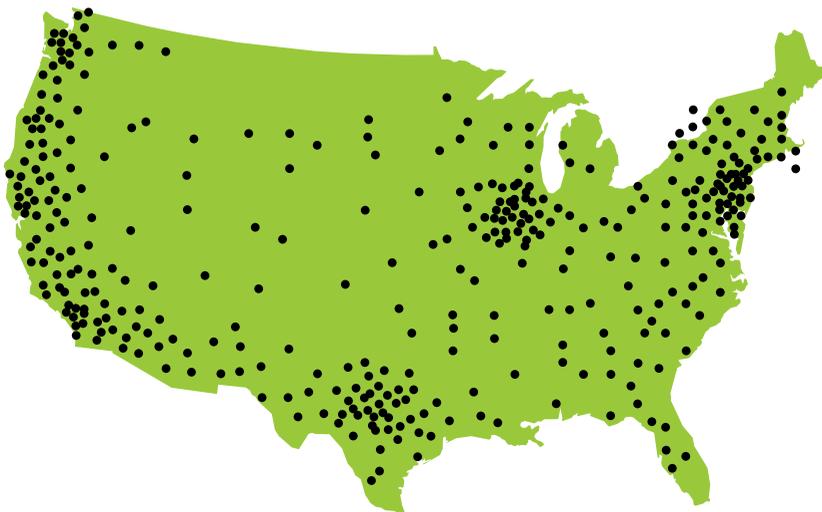
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Bettaway has developed one of the largest national pallet depot networks with over 425 pallet yards throughout the US and Canada



Supply

Centralized software analyzes pallet orders to find more effective supply options to meet customers' needs.



Retrieve

End users directly contact Bettaway service center to coordinate pallet pick-up and transport.



Repair

Service centers sort and repair all salvageable pallets, which are then placed back into inventory.



Reissue

Pallets are reissued from inventory for a fraction of the cost of new purchases, saving waste and money.

Partnering with Logistics

Our sister company is a nationally reputable transportation and logistics provider. As the inbound service provider to many end user facilities, we can utilize our delivering trucks to backhaul pallet returns. These partnered services ease the pallet process for our clients by eliminating multiple vendors and trucks, and lower transportation costs by allowing continuous pallet supply movement. It also gives us a huge logistical edge over the competition.





ORBIS provides a reusable plastic pallet program, which lets shippers reduce costs, drive sustainability, and optimize their supply chain.



range of sizes to fit many applications. For instance, a retail distribution center might opt for nestable pallets that are light enough to be lifted without equipment.

Some options can help shippers solve specific problems. For instance, plastic pallet makers can add rubber grommets for an improved coefficient of friction to keep products from slipping. A lip on the edge of a pallet can keep totes from sliding off.

Wood pallets can be built for specific customer uses, says Femal.

“Our engineers work in the Pallet Design System to design custom pallets for specific applications, while always looking for ways to reduce costs and meet the customer’s needs,” she says.

EXTRA PROTECTION

Another important pallet characteristic is resistance to vibration. Sensitive products such as electronics, pharmaceuticals, and food and beverages can be damaged in transit from stresses passed through the pallet from the roadway and handling equipment.

Because of their high stiffness ratings, Litco’s engineered wood pallets

transmit less vibration than other types of one-way and export shipping pallets, Sharon says.

Food manufacturers may ask for plastic pallets with metal additives to make them detectable by x-rays.

“X-ray and metal detectable pallets are another layer of protection companies can implement to help detect out-of-place items and contaminants, preventing recalls,” Roessler says.

Shippers should consider warehouse needs when choosing a pallet. Knowing how the pallets will be stored can determine the most appropriate pallet type and load rating. For example, ORBIS offers rackable pallets designed to be stored in racks and stackable pallets with bottom decks that allow for double stacking, Roessler says.

“The rackable pallets have little to no deflection, so they’re safe to handle the loads in a rack,” he says.

THE GREEN EQUATION

Determining the most sustainable solution requires examining the entire lifecycle of the pallet, from the cradle to the grave. The answers matter to those companies examining

the environmental impact of their supply chain.

Plastic pallet makers look at recyclability as a winning factor, while wood pallet manufacturers tout the forests as a renewable resource.

Wood is the only 100-percent renewable, recyclable, and reusable product available, the National Wood Pallet & Container Association says. Virginia Tech research found 95 percent of wooden pallets are being recycled rather than winding up in landfills.

RECYCLING OPTIONS

Each year more than 350 million pallets are recycled, and 87 percent of wood contained in pallets sent for recycling is used again in other pallets.

By comparison, plastic pallets are made from petroleum-based products, which can contribute to a high environmental impact in extraction, refining, and transportation.

One way to consider a sustainable pallet is to look for the one that lasts the longest with the least amount of repair.

While plastic pallets may have a

higher initial cost than wood, testing shows the plastic option is competitive over the entire lifecycle.

ORBIS research found pallets would need repair or replacement after 11 trips on average, Roessler says. A trip counts as an average handling sequence—loaded onto a trailer, pinwheeled, moved with an electric pallet jack, pushed across the floor, loaded onto a rack, loaded onto a gravity flow conveyor rack, and dropped. “The plastic pallet that we tested went more than 200 trips without failure which, depending on how many trips your pallets take, could last 10 years,” he says.

ENGINEERED WOOD

Litco’s engineered molded wood pallets are made of pre- and post-consumer wood waste and resin. They have been certified by the U.S. Department of Agriculture as BioPreferred and certified sustainable by MBDC: Cradle to Cradle® Assessment and Leadership.

During the manufacturing process, the wood fiber is dried to 3-percent

moisture content, mixed with resin, put in a mold, and heated to 350 degrees, which sanitizes the whole pallet. The pallet is dry, so it doesn’t attract moisture-seeking pests such as termites or carpenter ants, Sharon says.

At the end of their useful life, Litco’s engineered molded wood pallets are often ground up for boiler fuel, mulch, compost, and animal bedding.

LIGHTER PALLETS, LOWER FOOTPRINT

Shipping with lighter pallets consumes less fuel and may allow more product on each truck. For instance, iGPS says its plastic pallets weigh 30-percent less than standard 9-block wood pallets.

In fact, iGPS estimates replacing all wood pallets with plastic pallets would remove 9.25 billion pounds of weight from the nation’s supply chain. But they seem up to the task. iGPS has tracked its plastic pallets making more than 100 million trips throughout the grocery supply chain.

Wood pallets are valued for their

repairability, but eventually they are removed from service. Out-of-service units can be re-sold for consumer use or recycled into other products such as mulch. Plastic pallets can be recycled into new pallets or other products.

“If a company has a lot of pallets that have gone through their lifecycle and are now broken, we’ll buy them back, grind up that plastic, and re-inject it into other products,” Roessler says.

MAKING A STRATEGIC CHOICE

Ultimately, investment in pallets must align with the overall supply chain strategy, taking into account the full life-cycle return on investment. Like many choices, cheaper options may be more costly in the long run.

“Purchasing low-quality tires for your car can increase your gas costs, put greater strain on your brakes, and make an accident more likely,” Liebesman says. “Both tires and pallets determine how efficiently and safely you, or your shipments, arrive at your destination.”

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