



A Guide to Packaging Optimization

“True optimization is the revolutionary contribution of modern research to decision processes.” – George Dantzig

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There are several aspects to examine when optimizing your packaging, including materials selection, packaging protection, cost and sustainability. This guide will give you an overview of all of these factors so that you can make the best choices for your business.

TYPES OF PACKAGING MATERIALS



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OVERVIEW

Manufacturers should choose each level of packaging with the product and supply chain impacts in mind. If you're researching the various types of packaging materials, you've

come to the right place. The purpose of this guide is to help you through your packaging selection process by giving you some important considerations and facts about the most commonly used packaging materials.

3 CATEGORIES OF PACKAGING

Before getting into the types of packaging materials available, the first thing to know is there are three broad and sometimes overlapping categories for packaging:

- 1. Primary packaging** is the packaging that comes into immediate contact with the product. Think about primary packaging as the container in which the product is stored. For example, the primary packaging of choice for many specialty beverages is glass bottles.
- 2. Secondary packaging** not only adds additional protection for the product, but also protects the primary packaging of a product. For example, specialty beverage manufacturer, Cultured Kombucha, protects their primary packaging with our unique secondary divider systems.
- 3. Tertiary packaging** is the third category and stage of packaging, usually consisting of shrink wrapped pallets used to transport products in bulk from manufacturers to the retailers.

ASK THE RIGHT QUESTIONS

The importance of selecting the most suitable type of packaging material for your products is obvious, but knowing the right questions to ask in making this decision is not always so clear.

Consider the following list from The Packaging School:

- 1. What is the product form?** Is it solid, liquid, gas, or some combination, etc. Dry powdered or granulated products usually come in a paperboard carton or bag with or without a plastic liner. Solid foods often require a plastic film or bag surrounded by a paperboard container. Any products with a high moisture content will need packaging materials that prevent leaking or saturation.
- 2. What are the characteristics of your product?** For example, fragile, perishable and even oddly shaped products each have different requirements for protection and handling through the supply chain.
- 3. How will the product need to be protected?** Each product has different properties that require different methods of packaging. Fragile products need to be protected from outside forces and from shifting within the container both of which can cause breakage and damage. Food products also need to be able to withstand the rigors of shipping and delivery, in addition to protection from contamination. Some products have highly sensitive surfaces, such as electronics and require materials that reduce electrostatic discharge.
- 4. How will the package be used?**
- 5. Which materials are sustainable or recyclable?** As today's society increasingly values recyclability and sustainability, you should take this into consideration when choosing packaging materials. Not only is it important to your company, but it will also be increasingly important to your customers.
- 6. How much will it cost?** One kind of packaging may excel in certain areas when compared to another, but it may come at a much greater expense. The cost of packaging involves a number of considerations when choosing the best packaging materials for your product.
- 7. How will it be transported?** It is important to explore all possibilities for transport to find the most efficient option. Some routes

may be better than others in terms of fuel efficiency and sustainability.

8. How will the product be stored? Some packages will necessitate a controlled atmosphere, whereas others will not. Examining and testing all aspects of the package is essential to confirming that the product will remain unchanged.

9. What levels of packaging are needed? Some products require only one or two levels of packaging, but most often, products will require all three. It is important to consider which materials would work best as primary, secondary, or tertiary packaging to best support and protect the product throughout the supply chain.

More questions to consider:

- What are the necessary production quantities?
- What is the production schedule?
- How does your competition package their products?
- Can an existing packaging structure be improved?

TYPES OF PACKAGING MATERIALS

Types of packaging materials include chipboard, corrugated cardboard, paperboard and substrates, plastic, aluminum, and paper.

Each one of these materials has its own uses, advantages, and disadvantages:

- **Chipboard** is made from recycled paper and is often used for packaging smaller items like electronics, household goods, clothing,

shoes, and other small household items. Chipboard is strong enough to be shipped by itself but is often paired with additional materials like corrugated cardboard to provide further protection during shipping.

- **Corrugated cardboard** is made from three layers—a fluted layer lined with a smooth layer on each side—that are glued together. It is often made from a combination of recycled material and virgin material for strength. Corrugated cardboard is incredibly sturdy and can hold a large amount of weight within its structure. It's also very versatile in that it can be folded flat for easy storage.

Corrugated cardboard provides more protection than chipboard alone and can be used in tandem with chipboard for added protection or by itself. Partitions are typically used to protect fragile products by dividing them and ensuring they don't crush into each other.

- **Paperboard and substrates** are made from pulp pressed between two layers of paper. This makes it exceptionally strong and makes it ideal for protecting fragile items such as glass bottles. It also has many other uses, including wrapping food products and for retail display structures. SBS packaging (Solid Bleached Sulfate) is a substrate option that derives from paperboard and is made from bleached and refined chemically pulped fibers. It is typically used in premium packaging for beauty, pharmaceutical, or health products.

- Kraft Paper** is a paperboard grade using the Kraft process of converting wood into wood pulp that removes lignin and does not include bleaching which can further reduce the paper's strength. The Kraft paper process can also use all types of wood, unlike other paper processes. It is an environmentally sound choice because nearly all the chemicals used in the process are recovered and reused, it is a self-sustaining method, and the end product is recyclable and often reusable. Kraft paper is exceptionally strong, but also lightweight which keeps shipping costs down, and its coarse texture, durability, and flexibility provide more protection.

Plastic is one of the most commonly used primary packaging materials because it is lightweight, cheap, and flexible enough to accommodate almost any shape or size product. Plastic film wraps are also popular for protecting food items from moisture and air exposure during shipping. However, it is important to keep in mind that plastic is no longer a viable option for eco-conscious consumers. Moreover, the second most common source of plastic pollution comes from food packaging.

- Aluminum** can be used for primary packaging due to its durability and strength. It is also a good insulator that helps keep the product fresh and safe from moisture, sunlight, or other external elements. The downside of aluminum is that it has a high cost, which makes it expensive for the end consumer. This means that aluminum is



6 TYPES OF PACKAGING MATERIALS AND THEIR QUALITIES

- 1 CHIPBOARD**

 - strong
 - recyclable
 - sturdy
- 2 CORRUGATED CARDBOARD**

 - strong
 - sturdy
 - recyclable
 - versatile
- 3 PAPERBOARD AND SUBSTRATES**

 - exceptionally strong
 - recyclable (except for SBS)
 - versatile
- 4 KRAFT PAPER**

 - exceptionally strong
 - durable
 - recyclable
 - reusable
 - lightweight
 - flexible
- 5 PLASTIC**

 - lightweight
 - cheap
 - flexible
 - not sustainable
- 6 ALUMINUM**

 - durable
 - strong
 - insulating
 - expensive

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THE REAL PRICE OF PACKAGING



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OVERVIEW

Packaging plays a pivotal role in the distribution of goods, and a combination of multiple factors determines its price. The quality and cost of the packaging are usually directly proportional to the value of the goods being distributed. Since packaging provides different benefits to different industries, the prices are also set accordingly.

In this section, we'll dive into the main factors that impact the pricing of packaging, followed up by suggestions to reduce these costs without compromising quality or product safety.

“Everything can be improved.”

– Clarence W. Barron

CORE PRICING FACTORS

These are the core factors that impact the price of packaging:

1. Packaging materials

The type of material you choose will be one of the most prominent influencers on the cost of your packaging. From paper and plastic to corrugated cardboard and specialty items like aluminum foil or kraft paper, the variety of options and availability from different suppliers will greatly affect how much you spend, especially in the context of inflation.

Since fall of 2020, RISI Fastmarkets has published four industry recognized price increases, leading to corrugated and paper prices at an all-time high. Given the current state of the industry, you might save money upfront if you choose a lower-quality material, but it may not be worth it in the long run, as such a choice can also impact the customer's perception and compromise your product's safety.

2. Labor

The costs of labor are an important consideration in your operations, including the labor required to assemble and pack the product into each unit. The ability to speed up the assembly and pack out time while reducing the number of touches required by your associates are two of the most relevant factors to think about. For example, integrating automation into your packaging design or implementing a revised packaging design that reduces handling, or both, could have a big impact on reducing your labor costs. Conducting time studies of your current operations can help determine what solutions your business might leverage.

It is also important to note that the COVID crisis generated a paradigmatic shift – according to a recent McKinsey report, wages are increasing at more than twice the long-term rate before the pandemic. Moreover, wages in warehousing and transportation are rising four times quicker compared to the pre-pandemic period.

3. Shipping

Shipping cost varies according to distance and mode of transportation used. For example, an e-commerce company shipping a small number of items to a single location will be

able to ship by ground delivery for less than if they were shipping hundreds or thousands of items to multiple locations throughout the country. Also, per unit shipping costs increase when you're shipping more fragile or heavier products. For example, shipping glass-fragile items in protective cases will cost more per unit than shipping plastic-lightweight ones without protective cases. Given the fact that crude oil has reached \$120 per barrel, this is reflected by the increased shipping prices as well.

4. Warehousing

Warehouses play an important role in storing products before they reach customers. For example, some countries require goods to remain at customs for several days before being shipped out because it makes tracking imports and exports easier. For this reason, warehouses may charge for storing goods or because they need to keep inventory on hand for their suppliers or customers who may request immediate delivery. Various factors influence the warehousing costs – the packaging and the nature of the product included. For example, packaging materials that provide protection may allow storing products in warehouses that do not require climate control, which allows for lower costs.

5. Fulfillment

Fulfillment is an important consideration as well. For example, a small e-commerce business that sells all its product from one location may need less packaging than a company that ships its products from many different locations. However, if you have multiple fulfillment centers and offer free shipping, you may need more packing material than a business that offers free

shipping but only has one fulfillment center. When you outsource fulfillment services, you include the labor cost in your product's price.

HOW CAN YOU REDUCE PACKAGING COSTS?

As you may well know, the current economic climate is challenging for manufacturers. Raw material costs are rising, transportation and warehousing costs are not decreasing as fast as in previous downturns, and an ever-tightening labor market is creating difficulties in hiring qualified employees. In the packaging industry, all of these factors create a vicious cycle that can be mitigated via packaging efficiency solutions.

THE BOTTOM LINE

Regardless of the industry in which you operate, the price of packaging is probably among your most significant expenses. Global supply, logistical bottlenecks, world events, and production line delays make it more critical than ever to evaluate and research packaging efficiency solutions that can improve your packaging operational costs. Fortunately, simply understanding the cost factors involved can be enough to steer you towards the most cost-efficient options.

ITB Packaging can provide optimum protection for your products with our cost-effective and sustainable solutions.

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PROTECTIVE PACKAGING



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OVERVIEW

Damaged goods are a massive problem for e-commerce stores, online retailers, and even brick-and-mortar stores. It is said that getting your product to the buyer is only half the battle. Statistics show that 18.1% of products are returned, and 80.2% of returns happen because the product is damaged or broken. The hassle does not end there: when items are returned, the cost makes up approximately 17% of the prime costs per unit.

“Safety doesn’t happen by accident.”

– Anonymous

Protective packaging is a priority when it comes to tackling the e-commerce and retail return rate issue but is also critical if you are manufacturing and transporting durable goods like electronics, shipping any kind of food and beverages, or packaging easily scratched automotive components. In each scenario, you need a protective solution that ensures products don’t get damaged while moving through the distribution cycle and that the unboxing experience is optimal.

WHAT IS PROTECTIVE PACKAGING?

Protective packaging is any form of packaging that is designed to shield, support, stabilize, and insulate products from damage or deterioration throughout the entire supply chain, but particularly during shipping and transport. In some situations, protective packaging can be used as a primary packaging component, but the more common applications are for secondary packaging.

Types of protective packaging may include:

- bubble wrap
- air pillows/air bags
- corrugated wrap
- molded wrap
- styrofoam peanuts
- corner blocks
- angle/edge boards
- packaging inserts
- void fillers

THE HIDDEN COST OF CUSTOMER RETURNS

When you ship a product, you want it to arrive in the same condition it was when you packed it. If your customers receive damaged goods, they may not only return them for a full refund but also tell their friends and acquaintances about their bad experience.

The hidden costs of customer returns can be high. It does not exclusively boil down to the initial sale price, the missed profit, and the original shipping cost. You also have to consider the labor, administrative, and customer service costs, along with the cost of inspecting/repairing the item for a potential resale. Furthermore,

the storage and disposal of returned items may add to the total cost of customer returns. Too many returns due to damage means your brand reputation could take a hit. Then there's the compensation method (such as a substantial discount or a free item replacement) which involves an additional charge for your company.

Additionally, damaged products can result in lost sales and long-term consequences, especially in B2B relationships. Receiving a damaged shipment may shut your partner's production lines down, resulting in production downtime, operational hurdles, business relationship impact, and financial loss.

WHEN SHOULD YOU USE PROTECTIVE PACKAGING?

Your choice of protective packaging will depend on many factors. If you are not sure if your type of product requires protective packaging, here are some considerations:

- the product's fragility
- the product's weight
- the product's size/dimensions
- the product's edges and corners
- the quantity of products per package
- the shipping method
- the excess space in your current packaging solution
- the product's value
- the product's various and ultimate destinations
- the customer experience you want to provide

PACKAGING PROTECTION SOLUTIONS AND THE ENVIRONMENT

In today's market, sustainable and environmentally friendly packaging is a must-have. If you are committed to environmental responsibility, using environmentally harmful protective packaging components such as styrofoam packing peanuts or traditional plastic bubble wrap will be a turnoff for many customers.

THE BOTTOM LINE

The biggest takeaway from all this is that if your packaging solution is not up to industry standards, you risk destroying your product or upsetting your customers—neither of which will earn you repeat business.

Being proactive with your packaging protection, choosing suitable materials and finding the appropriate provider is the only way to ensure that your products arrive safely at their destination.

ITB Packaging can provide optimum protection for your products with our cost-effective and sustainable solutions.

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SUSTAINABLE PACKAGING SOLUTIONS



“There is no such thing as ‘away’. When we throw anything away it must go somewhere.”

– Annie Leonard

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OVERVIEW

As resources become scarcer and climate change becomes more pronounced, more companies are pushed toward the front line of

environmental protection, and the necessity for sustainable packaging solutions becomes increasingly evident. Businesses must begin to look outside of their comfort zone in order to meet the challenges of today’s rapidly changing global environment, slowly shifting toward a circular economic model.

In addition, the consumers’ view is starting to shift as well: the 2021 Global Buying Green Report found that 67% of consumers value products packaged in recyclable materials, while 54% of them consider eco-friendly packaging

when making the purchase decision. 83% of respondents are open to paying more for products shipped in sustainable packaging.

WHAT IS SUSTAINABLE PACKAGING?

The sustainable packaging definition generically covers any type of packaging that implies a lower environmental impact. Sustainable packaging initiatives can be assessed according to the following variables:

Sustainability – determined by compostability, reusability and recyclability

Performance – determined by how well the packaging protects the products compared to less sustainable packaging alternatives

Sortability – how easily can the packaging be sorted at MRFs and what can be done with it post-recycling

Cost

In addition, the Sustainable Packaging Coalition, a membership-based collaborative of businesses and industries desiring to make packaging more sustainable, has identified eight factors that make up a sustainable package.

Sustainable packaging is:

- Beneficial, safe, and healthy for individuals and communities throughout its lifecycle
- Able to meet market criteria for performance and cost
- Sourced, manufactured, transported, and recycled using renewable energy
- Able to maximize the use of renewable or recycled source materials

- Manufactured using clean production technologies and best practices
- Made from materials healthy in all probable end-of-life scenarios
- Physically designed to optimize materials and energy
- Effectively recovered and utilized in biological and/or industrial cradle-to-cradle cycles

Infographic. See our infographic illustrating the SPC’s 8 criteria for Sustainable Packaging, [What is Sustainable Packaging? \[Infographic\]](#).



WHAT ARE SUSTAINABLE PACKAGING MATERIALS?

Various sustainable packaging materials are available today, each with different benefits and drawbacks. Some of the most common sustainable packaging materials include paper and cardboard (as they can be recycled 5-7

times), organic fabrics (hemp, organic/recycled cotton, palm leaves, etc.), and biomaterials (mushrooms, cornstarch, seaweed).

4 EXAMPLES OF SUSTAINABLE PACKAGING PRINCIPLES

By using sustainable packaging techniques, businesses are able to reduce the amount of material and resources used as well as save money in the long run. Some of the most popular sustainable packaging techniques include:

- 1. Bundling.** Bundling is when products are shipped together instead of individually packaged. For instance, a retailer could bundle several small items instead of putting each in its own box. This reduces the amount of cardboard or other materials needed to ship the products to a customer's house. Another way to use bundling is to bundle two or more products together and put them in packaging generally meant for one product.
- 2. Moving more with less.** Moving more with less refers to reducing the amount of space an item must be packaged into while ensuring it reaches its destination safely. This is accomplished by finding alternative ways to package an item besides using traditional foam or bubble wrap.
- 3. Increasing density.** By reducing the amount of space that each unit takes up in the package, the amount of material used is decreased while maintaining its original functionality.

4. Utilizing fewer materials and resources.

The first way that packaging can be made sustainably is by using less material overall. This may seem like an obvious solution, but it can easily be overlooked. When you are thinking about the design of your new package, you should have in mind the bare minimum of materials needed to accomplish the task. For instance, if you are designing the packaging for a pen, instead of thinking about what the perfect box or tube would look like for your product, think about how it could be made from one piece of cardboard that requires no glue and uses no other materials besides ink. And then think about how you could accomplish this feat.

WHAT ARE THE ADVANTAGES OF SUSTAINABLE PACKAGING?

Cost-effective. Traditional packaging materials are cheaper than sustainable alternatives like recycled content or biodegradable plastics, but the long-term savings that come from the reusability of sustainably packaged products can balance out the upfront costs considerably. Since you don't have to buy new materials every time something needs to be shipped out or returned, you can recoup your initial investment in no time.

Minimizes your carbon footprint. Using sustainable packaging will help to reduce your carbon footprint. Your products are packaged in materials that have been produced with minimal energy consumption and have little or no negative impact on the environment. They also contain recycled content, and they

are recyclable at the end of their life cycle. This means that they are more cost-effective than conventional packaging materials and can reduce waste disposal costs by using fewer resources during production and transport.

At the same time, because sustainable materials can be recycled or reused instead of being thrown away as trash, they help reduce landfill overload. This reduces pollution caused by incineration or dumping in landfills where there's no oxygen for anaerobic bacteria to break down organic material, releasing methane gas which is highly damaging to our environment.

Supports your branding efforts. Packaging plays a vital role in how your customers perceive your products. If you use eco-friendly or sustainable packaging, your products will be associated with environmental friendliness and responsibility, which is essential these days since many consumers have become aware of their purchases' effects on the environment.

WHAT IS THE FUTURE OF SUSTAINABLE PACKAGING?

Sustainable packaging has evolved over the last few years. Large companies have begun to understand the importance of going green, and consumers have begun to realize that sustainable packaging benefits not only the environment but also their pockets. The future of sustainable packaging is certain: it will continue to evolve as companies try to appeal to the growing number of socially conscious consumers.

By 2050 experts have predicted that there will be about 937 million tons of plastic in the ocean and only 895 million tons of fish. Not only is plastic devastating to the environment, but the economy is suffering as well. A massive 95% of plastic packaging does not get recycled each year, equating to an annual loss of \$80 to \$120 billion! Those two statistics alone are reasons to establish new and more sustainable ways of packaging merchandise.

The growth of sustainable packaging isn't limited by geographic boundaries: we can expect the same trends in sustainability will continue to spread throughout countries worldwide.

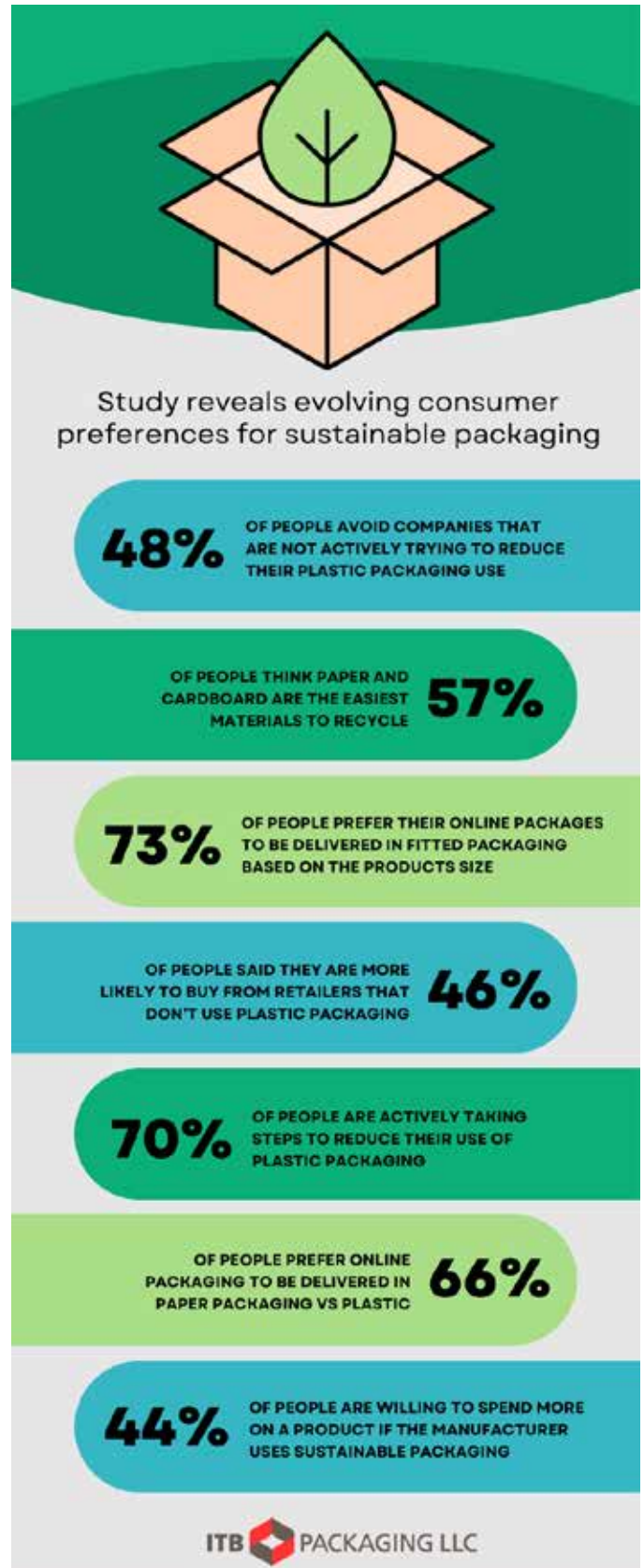
An empirical study, conducted in 2020 by independent research company, Toluna, showed a positive correlation between sustainable packaging and consumer preferences. Due to the catastrophic effect that plastic packaging has on our planet, many consumers are actively avoiding companies that are not diligently seeking alternative packaging solutions, such as paper or cardboard.

- 48% of people avoid companies that are not actively trying to reduce their plastic packaging use.
- 57% of people think paper and cardboard are the easiest materials to recycle.
- 73% of people prefer their online packages to be delivered in fitted packaging based on the products size.
- 46% of people said they are more likely to buy from retailers that don't use plastic packaging.

- 70% of people are actively taking steps to reduce their use of plastic packaging.
- 66% of people prefer online packaging to be delivered in paper packaging vs plastic.
- 44% of people are willing to spend more on a product if the manufacturer uses sustainable packaging.your products arrive safely at their destination.

ITB Packaging can provide optimum protection for your products with our cost-effective and sustainable solutions.

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IMPROVE PACKAGING LINE EFFICIENCY



“Watch the little things; a small leak will sink a great ship.”
– Benjamin Franklin

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OVERVIEW

Manufacturers, distributors, and everyone else involved in the supply chain know that there is always room for improvement. Improving your packaging line efficiency can involve either making improvements to what you already have

in place, and/or upgrading your operation with more advanced equipment or automation. In either case, you’ll want to evaluate things like floor space, downtime, throughput, packaging materials, waste, and employee training.

WHAT IS THE PACKAGING LINE?

If you’re just starting out, a basic understanding of a packaging line might be helpful. To put it simply, the packaging line is where containers enter into the packaging system, and are assembled, filled, and sealed before being loaded on pallets or readied for shipping. The

packaging process can be done either manually or using automated or semi-automated machines. Depending on the volume of products you need to ship in a given time period, you'll need to select the right method for your packaging line to be successful. Low volumes can be managed with manual labor while high volumes will likely require some machinery and automation for the highest level of efficiency.

THE BENEFITS OF AN OPTIMIZED PACKAGING LINE

An optimized packaging line provides numerous benefits, including improved efficiency, quality control, safety and customer satisfaction.

- **Productivity:** The benefits of increased efficiency are clear. Not only does it keep things on schedule, but it also reduces labor costs associated with overtime, absenteeism, and turnover.
- **Quality:** A streamlined process leads to better quality control as employees can focus more on quality and less on their physical environment.
- **Safety:** Optimal production speeds create a safer work environment by allowing employees more time to react to potentially dangerous situations.
- **Customer Satisfaction:** Reducing lead times can have a positive impact on customer satisfaction by helping to ensure that they receive ordered products in a timely manner. This, in turn, can lead to increased brand loyalty and repeat purchases.

TIPS FOR PACKAGING LINE OPTIMIZATION

If your goal is an optimized packaging line, consider the following tips:

1. **Identify potential problems:** The first step to optimizing your packaging line is identifying potential problems. A full packaging line audit will include analyzing the current process, checking for errors, and looking for inefficiencies. By pinpointing and understanding where the problems exist and the challenges you need to overcome, you can take the necessary steps to improve the process. Finally, be sure to set clear and measurable performance goals.
2. **Minimize packaging waste:** Reducing packaging waste is a great way to optimize your packaging line while taking actionable steps toward sustainability. Evaluating and using suitable packaging materials and techniques can significantly reduce the amount of waste produced. Additionally, ensuring that packaging materials are stored and handled properly can greatly impact your process's efficiency.
3. **Reduce machine downtime:** Reducing machine downtime is essential for maintaining an efficient packaging line. This can be achieved by regularly inspecting and maintaining equipment and automating certain processes. Additionally, keeping critical spare parts on hand and implementing a preventative maintenance schedule can help ensure that machines run optimally. Lastly, consider staggering

employee break times so that machines can run continuously. And don't overlook tapping into your equipment supplier's expertise.

- 4. Choose the right equipment:** Before you get started with optimization, make sure your equipment is up to the task. For example, if you're replacing outdated machinery with newer technology, make sure it has all the features you need and will work well in your environment. Opt for machines with automated packaging options that enable you to save space by integrating multiple processes into one machine. Consider purchasing machines with built-in features that preserve the packaging material's integrity to make sure it will be eligible for recycling. Careful packaging line design and equipment integration will factor in machine placement, speeds, accumulation capacity, flexibility, conveyor systems and the products primary and secondary packaging characteristics.
- 5. Don't skimp on training:** Training employees and operators may initially reduce productivity, but it can pay off in the long run by empowering employees to recognize and proactively address problems. There are several ways that better training leads to improved performance. A thorough understanding of the equipment can help employees work more confidently and quickly, as well as develop skills that can reduce downtime, such as preventative maintenance.

HOW TO MEASURE PACKAGING LINE EFFICIENCY

If your line relies heavily on machinery, you'll need to understand Overall Equipment Effectiveness (OEE) measurements and know your packaging line efficiency calculation based on availability, performance and quality. A complete explanation is beyond the scope of this article but the basic steps include:

- Determining your maximum production rate
- Identifying and defining causes of line stops
- Establishing center line operating parameters

For a more in-depth explanation of OEE, see [Calculate OEE](#).

THE BOTTOM LINE

Optimizing your packaging line is a must for businesses that depend on packaging for their success. There are a number of factors to consider and tips to follow when optimizing your packaging line, including streamlining processes, automating processes, and investing in the latest technology. With the right optimization, you can ensure that your packaging line runs smoothly and efficiently, while still meeting your customer's needs.

OPTIMIZING YOUR PICK-AND-PACK WAREHOUSE



“Workers’ movements between specific pickup locations account for nearly 60% of their work time and greatly affect cost.”

– Gwynne Richards

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[Pick-and-Pack Warehouse Checklist](#)

OVERVIEW

Whether you’re an industry veteran or a newcomer, our goal is to equip you with valuable knowledge to reduce expenses, bolster protection, augment density, and encourage sustainability. This article will navigate you through the complexities of pick-and-pack warehouses, revealing indispensable techniques for establishing and refining these essential distribution and fulfillment centers.

PICK-AND-PACK WAREHOUSE SET-UP

1. Location and Layout

Finding the perfect location for your pick-and-pack warehouse is a crucial step. Consider factors such as:

- Proximity to customers
- Transportation infrastructure
- Labor availability
- Real Estate costs
- Market access
- Infrastructure and utilities
- Regulatory environment
- Risk factors
- Expansion opportunities, and
- Business Incentives

Once you’ve secured the ideal location, focus on designing a layout that maximizes efficiency and minimizes unnecessary movement. Organize your storage areas logically, and group products that are often picked together. Reducing travel time will increase productivity and keep fulfillment numbers high!

Learn how to apply the “ABC Analysis” to help optimize the picking process developed by Gwynn Richards in [this short video](#) (01:51)



For more on warehouse layouts, check out [this video](#) by ShipEdge (04:36)



2. Equipment and Technology

Equipping your warehouse with the right tools is paramount to success. Invest in sturdy shelving units, pallet racks, and conveyors to optimize storage and movement. To take your operation to the next level, embrace technology. Automated sorting systems and barcode scanners can drastically improve accuracy and speed. Harness the power of data with inventory management software, allowing you to track stock levels, forecast demand, and make smarter decisions.

3. Staffing and Training

Your warehouse team is the backbone of your operation. Hire individuals who understand the importance of precision and efficiency. Provide comprehensive training to ensure they know the picking and packing methods you implement. Foster a positive work environment that encourages collaboration and communication. Keep your team motivated, and they will be more productive!

4. Inventory Management Systems

Maintaining control over inventory is crucial for any successful pick-and-pack warehouse. Implementing a robust inventory management system will enable you to track stock levels in real-time, automate reordering, and reduce the risk of stockouts. Leverage technology to your advantage and avoid inventory nightmares.

PICK-AND-PACK METHODS

Efficient picking and packing methods are crucial for optimizing warehouse operations and ensuring timely order fulfillment. Here are some standard methods used in the industry:

- **Zone Picking** Imagine your warehouse divided into zones, each assigned to a specific picker. Zone picking allows for simultaneous selection within different areas, increasing efficiency and reducing congestion. By strategically organizing your product locations, you'll minimize the distance traveled and maximize fulfillment speed.
- **Wave Picking:** Instead of completing orders one by one, wave picking allows you to group similar orders. By optimizing the sequence of picking tasks, you can minimize travel time and make the most of your resources.
- **Batch Picking:** Picture this: multiple orders, one cart. Batch picking involves selecting products for multiple orders simultaneously. As you navigate the warehouse, collecting items for each order, you reduce travel time and increase productivity.
- **Piece Picking:** Piece picking involves individually selecting items for each order. While time-consuming, this method is ideal

for businesses handling complex or fragile products. With careful attention to detail, you'll ensure every customer receives their unique selection.

APPROACHES TO ORDER FULFILLMENT

Order fulfillment is a critical aspect of any business that involves shipping products to customers. Various approaches to order fulfillment exist, each with its advantages and considerations. Let's explore some of the common practices:

1. **Merchant Fulfillment:** Merchant fulfillment is where sellers manage the entire order fulfillment process in their fulfillment centers. It involves inventory storage, order picking and packing, and direct shipping to customers. This method offers sellers comprehensive control over the fulfillment process but necessitates warehouse space, equipment, and workforce investment.
2. **Dropshipping:** Dropshipping is a fulfillment method where sellers don't hold inventory. Instead, they collaborate with suppliers who ship products directly to their customers. In this approach, sellers act as intermediaries, focusing on marketing and customer service while relying on suppliers for storage and shipping. Dropshipping eliminates the need for sellers to manage a physical warehouse but may result in less control over inventory and order fulfillment.
3. **Third-Party Fulfillment:** Third-party fulfillment involves outsourcing the entire order fulfillment process to a specialized company. These companies have dedicated fulfillment centers, inventory management

systems, and experienced picking, packing, and shipping staff.

4. **Blended:** A blended fulfillment method can combine two or three of the above models. For example, when a company handles all order fulfillment internally, except for outsourcing to a third party during peak times and holidays. This company might also drop-ship directly from the manufacturer for large or bulky products.

CHALLENGES IN PICK-AND-PACK WAREHOUSES

In warehousing and distribution, the pillars of success rest on improving inefficiencies, maintaining accuracy, managing time effectively, and optimizing space. These aspects directly impact the operation's smoothness, productivity, service reliability, and growth potential, making their ongoing assessment and improvement vital.

- **Inefficient Processes:** Inefficiency can creep into any warehouse. Bottlenecks, poor organization, and manual data entry can impede the flow of operations. Identify and address these inefficiencies promptly to optimize your pick and pack processes.
- **Accuracy and Quality Control:** The last thing you want is for your customers to receive the wrong items or damaged goods. Ensuring consistent and precise accuracy in all quality control measures is vital. Implement rigorous inspection procedures, double-checking each order before it leaves the warehouse. Embrace technology to automate quality control processes, reducing errors and enhancing customer satisfaction.
- **Time Management:** Efficient time management is crucial for meeting customer expectations and beating the competition. Set realistic deadlines, optimize workflows, and empower your team to work smarter, not harder. Remember, time is a valuable asset that can make or break your warehouse's success.
- **Space Optimization:** Space is a precious commodity in any warehouse. Inefficient use of space can lead to wasted resources, higher costs, and limited growth potential. Embrace innovative storage solutions like mezzanine levels, vertical racks, and automated systems to maximize your warehouse's capacity.

SUGGESTED IMPROVEMENTS FOR PICK-AND-PACK WAREHOUSES

Implementing the following improvements can significantly enhance productivity, reduce costs, and increase customer satisfaction.

- **Streamlining Workflows:** Identify bottlenecks and eliminate unnecessary steps in your workflows. Encourage open communication between departments, enabling them to collaborate and find innovative ways to streamline processes.
- **Implementing Automation:** Automation is integral to modern warehouse operations, especially in pick-and-pack fulfillment. Automated systems can be incredibly efficient, significantly reducing the time it takes throughout the entire process. They can also reduce errors and increase accuracy. Automation might be guided vehicles, robots, automated storage and retrieval systems, or conveyor systems. Advanced systems also use AI or machine learning to improve their

effectiveness further, learning from past performance to optimize future operations.

- **Employing Dimensional Right-sizing:**

This refers to ensuring that the right-sized package is used for each item. Right-sizing is critical because shipping carriers often charge based on dimensional weight, which considers a package's size and weight. By using the smallest possible package that can safely and securely contain an item, warehouses can minimize shipping costs. Moreover, it helps optimize the warehouse's storage space, reducing waste and improving overall efficiency.

- **Considering Dimensional (DIM) Weight:**

DIM weight is a pricing technique used by shipping carriers that considers package volume to determine pricing. In other words, a large yet lightweight package may cost more to ship than a small, heavy package. By understanding and considering DIM weights, warehouses can make intelligent decisions about how they pack and ship items. For instance, if an item can be disassembled or packed more compactly without risk of damage, it may be more cost-effective to do so. It's important to note that these three aspects—automation, dimensional right-sizing, and understanding of DIM weights—are beneficial in isolation and can reinforce each other synergistically. For example, automation systems can be designed and programmed to optimize for dimensional right-sizing and DIM weights, leading to an even more significant overall increase in efficiency and cost-effectiveness. Here's a free to use [DIM Weight calculator](#) that also explains how DIM weight is calculated differently by FedEx, UPS and USPS.

- **Utilizing Pick and Pack Software:** Software solutions can be a warehouse manager's best friend in the digital era. Invest in pick-and-pack software that integrates seamlessly with your inventory management system. These tools can optimize order-picking routes, provide real-time visibility into stock levels, and generate valuable reports for data-driven decision-making.
- **Optimizing Space Utilization:** Analyze your warehouse layout and storage methods to identify areas of improvement. Implement intelligent storage solutions that make the most of your available space. From high-density racks to narrow aisle configurations, every square foot counts.
- **Choosing the Right Packaging Solution:** Your warehouse's success hinges heavily on selecting the right packaging solution. While packaging must be robust enough to protect the product during transit, it should also be optimized to minimize shipping costs. Poor packaging can result in damage to products, leading to customer dissatisfaction and costly returns or replacements. Proper packaging reduces the risk of damage, significantly reducing these additional expenses.

Learn more about warehouse automation in this short [video from NetSuite \(01:10\)](#)



BEST PRACTICES FOR PICK-AND-PACK OPERATIONS

Optimizing pick-and-pack operations involves several essential best practices. These include standardizing procedures for consistency, using precise product identification methods for accuracy, implementing efficient packaging techniques for customer satisfaction, and adopting sustainable practices for environmental responsibility.

1. **Standardizing Work Procedures:**

Consistency is the key to success. Standardize work procedures to ensure every employee follows the same process. Standardization minimizes errors, reduces training time, and promotes a culture of excellence. Document standard operating procedures (SOPs) and provide regular training updates to keep everyone on the same page.

2. **Ensuring Accurate Product Identification:**

Accuracy is non-negotiable in the world of pick and pack. Implement precise product identification methods such as barcodes, RFID tags, or QR codes. Train your staff to pay attention to details and verify product information before packing. Eliminating confusion and errors will enhance customer satisfaction and build a reputation for reliability.

3. Efficient Packaging Techniques: Packaging is not just a means to an end; it's an opportunity to impress your customers. Optimize your packaging techniques to strike the perfect balance between protection and efficiency. Use appropriate box sizes, invest in protective materials, and ensure sturdy sealing. You'll earn customer loyalty and minimize returns by delivering packages in

pristine condition. See how our packaging systems accomplish these objectives and more.

4. Embracing sustainability: In the age of environmental consciousness, sustainability is no longer a choice—it's a responsibility. Explore eco-friendly packaging options such as recyclable and biodegradable alternatives. Reduce waste, optimize packaging size, and embrace sustainable practices throughout your pick and pack processes. Show your customers that you care about the planet as much as you care about their orders.

THE BOTTOM LINE

Remember, every detail counts, from the location of your warehouse to the packaging solutions you use. Each component is interconnected, contributing to the overall effectiveness of your operations and the satisfaction of your customers. Make wise choices, continuously learn, and strive to improve, and you'll set your warehouse up for long-term success.

ITB Packaging can provide optimum protection for your products with our cost-effective and sustainable solutions.

[CONTACT US TODAY](#)

Pick-and-Pack Warehouse Optimization Checklist

SETTING UP YOUR PICK-AND-PACK WAREHOUSE:

- Find the perfect warehouse location considering various factors
- Design a layout that maximizes efficiency and minimizes unnecessary movement
- Invest in sturdy shelving units, pallet racks, and conveyors for storage and movement
- Implement technology, like automated sorting systems and barcode scanners
- Establish an inventory management system to track stock levels and forecast demand
- Hire dedicated individuals and provide comprehensive training

IMPLEMENTING PICKING AND PACKING METHODS:

- Divide your warehouse into zones and assign them to specific pickers (Zone Picking)
- Group similar orders together for optimization (Wave Picking)
- Select products for multiple orders simultaneously (Batch Picking)
- Implement piece picking for complex or fragile products (Piece Picking)

SELECTING AN ORDER FULFILLMENT APPROACH:

- Consider merchant fulfillment if you wish to manage the entire order process
- Opt for dropshipping if you want to act as an intermediary without holding inventory
- Outsource the entire order fulfillment process to a third-party company if needed
- Use a blended approach to leverage the benefits of various fulfillment methods

ADDRESSING CHALLENGES IN PICK AND PACK WAREHOUSES:

- Identify and address inefficiencies promptly
- Implement rigorous inspection procedures for quality control
- Efficiently manage time to meet customer expectations
- Optimize space usage to save resources and costs

SUGGESTING IMPROVEMENTS FOR PICK AND PACK PROCESSES:

- Identify bottlenecks and eliminate unnecessary steps in workflows
- Implement automation to increase efficiency
- Use pick-and-pack software for seamless integration with your inventory management system
- Optimize space utilization using intelligent storage solutions
- Use dimensional rightsizing for cost-effective, space-efficient packaging
- Utilize DIM weights to optimize packaging decisions for cost and space efficiency
- Choose a packaging solution that works with automation, rightsizing and DIM weight shipping

BEST PRACTICES FOR PICK AND PACK OPERATIONS:

- Standardize work procedures to minimize errors
- Implement precise product identification methods such as barcodes, RFID tags, or QR codes
- Optimize packaging techniques for better protection and efficiency
- Embrace sustainable practices in all your pick-and-pack processes