LARSON PACKAGING COMPANY

A Buyer's Guide to Plastic Corrugated Packaging

This guide to Plastic Corrugated is the easiest way to get the right industrial packaging protection for your equipment or product

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What is Plastic Corrugated Packaging anyway?

Plastic corrugated packaging is made from polypropylene or polyethylene extruded into twin-walled plastic sheets. The effect is similar to corrugated fiberboard; the result is a tough, lightweight material that is easily fabricated and cut, structurally reliable, and thus extremely useful for both regular and reusable protective packaging.

An exceptional strength-to-weight ratio means this highly versatile, semi-permanent packaging is often found in the form of plastic bins, boxes, and totes, and well-placed folds, welds, and reinforcements can make plastic corrugated packaging surprisingly robust.

It's incredibly durable, waterproof, and resistant to many chemicals. This makes it an excellent choice for reusable packaging.

Plastic corrugated also doesn't generate particulates (such as paper dust) and it can easily be wiped down or sanitized. This makes plastic corrugated is a strong alternative to traditional paper corrugated for certain applications — especially cleanroom and medical products.

How is plastic corrugated typically known?

There are several different trade names for plastic corrugated, including:

- Correx
- Biplex
- Cartonplast
- Polyflute
- Coroplast
- FlutePlast
- IntePro
- Proplex
- Twinplast
- Corriflute
- Corflute

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Key features of Plastic Corrugated

The are a number of key features that make plastic corrugated a sensible and cost-effective material choice for different packaging applications:

Lightweight
Corrugated plastic is very light, making it easier to handle and transport packages made from this material.

Durable
It is resistant to water, chemicals, and impact, making it long-lasting and suitable in both indoor (storage) and outdoor (transport) situations.

Cost-effective
Compared to other materials, corrugated plastic is relatively inexpensive.

Versatile
It can be easily cut, folded, and shaped to makes packaging of various dimensions.

Insulating properties
The fluted structure provides thermal insulation while the inherently inert nature of polypropylene offers strong electrical insulation.

Weather-resistant
It can withstand various weather conditions without degrading quickly.

Recyclable
Many types of corrugated plastic are recyclable, making it an environmentally sustainable option when packaging is more likely or able to be reused.

Easily printed on
The surface can be easily printed on for increased or premium visual appeal.

Corrosion-resistant
Unlike metal alternatives, it doesn't rust or corrode. In fact, it is resistant to most oils, solvents, (as well as water) at normal temperatures.

Many colors
Plastic corrugated comes in a wide range of colors and can even be translucent or opaque.

Non-toxic
Plastic corrugated is pH-neutral and generally safe for use sensitive environments, including food-related applications.

Easy to clean
Plastic corrugated's smooth, waterproof surface can be easily wiped clean.

The benefits of Plastic Corrugated Packaging

Plastic corrugated materials offer numerous advantages in various applications, from packaging to signage. These benefits stem from the material's unique structure and properties, making it a versatile and cost-effective choice for many industries.

Reusable.

Plastic corrugated packaging is reusable as long as your customer or user can return the packaging to you. This increases efficiency and cuts long-run cost as well as reducing waste. However, it makes specification (getting strength and dimensions right) much more important.

Sturdy.

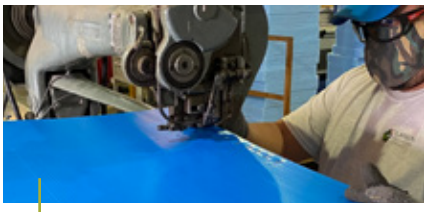
Plastic corrugated packaging typically delivers better overall protection and support. It resists crush/impact damage better than corrugated cardboard.

Sustainable.

Plastic corrugated packaging is often made of recycled material. More, it can often be re-used many times and can even be recycled itself at the end of its useful life.

Lightweight and flexible.

Sheets of plastic corrugated are lightweight given their strength and durability. Packaging typically remains light relative to the weight of the entire package and that improves transportability while keeping down shipping costs.

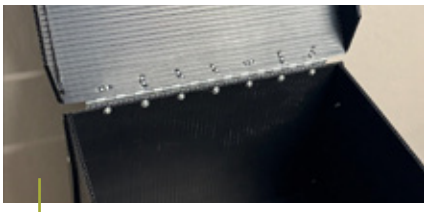


Easy to fabricate.

It's very easy to die-cut, stitch or sonic weld corrugated plastic to create a custom packaging design. It's foldable, and can often be compactly transported in a "flat" form, then assembled on location.

Weatherproof.

Plastic corrugated packaging is water-resistant. This is a critical benefit for packaging that runs the risk of being exposed to weather in-transit.



Inert.

Plastic corrugated packaging has a neutral pH factor, making it non-toxic and resistant to most corrosive chemicals and solvents.

Applications: who uses Plastic Corrugated Packaging and why

Corrugated plastic packaging is growing in popularity as organizations look for innovative ways to contain packaging costs, reduce shipping expenses and use, minimize material waste and scrap. It's typically a great fit for companies that:

1. Require durable packaging that will last a long time.
2. Require stronger protection than corrugated cardboard offers.
3. Have customers who will either return the packaging or reuse it themselves.
4. Have critical requirements such as strong insulating properties or ability to clean.
5. Are strongly focused on sustainability.

Cleanrooms

The biggest users of plastic corrugated are companies that have cleanrooms. That's because corrugated plastic is ideal where packaging hygiene and resistance to moisture is paramount. This includes organizations in industries such as pharmaceuticals and nutraceuticals, laboratories and government and academic research facilities, as well companies operating in the automotive, precision electronics and aerospace/avionics industries.

Food and beverage

Food and beverage products benefit from corrugated plastic packaging as it is a lightweight, hygienic, and moisture-resistant solution that helps maintain the freshness of the product and will not react with it.

Electronics and semi-conductors

Corrugated plastic can not only resist moisture to keep sensitive electronic and semi-conductor industry equipment and products safe from water damage, it also insulates against electrostatic shock.

Medical and health

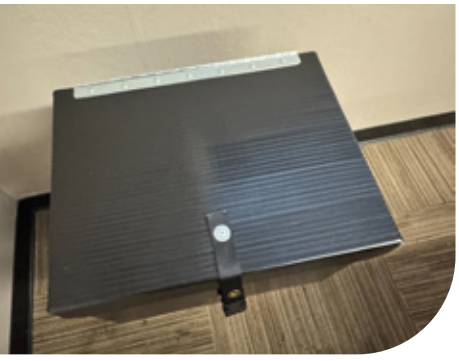
Medical equipment regularly requires a sanitized and moisture-resistant packaging to meet health regulations. Corrugated plastic is non-porous, and offers a strong barrier to water. Other medical products are chemical in nature, which demands an inert packaging that will not react to the material being transported or stored.

Retail and E-commerce

The inherent durability and chemical resistance of plastic corrugated makes it perfect way for safely shipping fragile or perishable goods. Custom box and container designs also offer the opportunity for custom branding and colors are more visually appealing than corrugated cardboard packaging. The reuse potential can also be exciting if the packaging is able to make multiple trips through the supply chain.

Agriculture

Strong, lightweight and re-usable corrugated plastic containers and packaging can be used to safely transport anything from produce to flowers, either to wholesalers or to end-consumers. Natural moisture-resistance helps prevent mold and spores build-up and reduces spoilage and waste. Corrugated plastic even allows for unique features like airflow-providing ventilation holes.



Plastic Corrugated Packaging: when to use and when not to use it

Plastic corrugated shines in many protective packaging applications. Yet it also has limitations and drawbacks that designers and users ought to keep in mind.

The choice often depends on the product being packaged.

For example, for short-term, or very cost-sensitive applications, corrugated cardboard is often sufficient. For heavier products, long-term packaging use, or a high-moisture environment, plastic corrugated is likely to be the better option.

Environmental considerations can also play a role. Businesses significantly committed to sustainability might prefer corrugated cardboard, while those requiring long-term durability might lean towards plastic corrugated.

Remember that plastic corrugated is also recyclable. Once the useful lifespan of your packaging is gone it can be despatched to a recycler. Often the key factor is your clients — if they are unlikely to return the packaging, it might not be worth the investment.

Typically, if, you're able to reuse your packaging, an investment in plastic corrugated investment will pay for itself after 5 to 10 trips.

Corrugated packaging can also run into intrinsic limits in the face of heavy forces, large, sustained loads or substantial amounts of stacking. In very cold environments, plastic can also become brittle and less durable in the face of otherwise-normal impacts. At this point, other materials (such as wood crates), begin to look more attractive. That being said, UV additives or resin compositions can help the corrugated plastic withstand extremes of heat and cold.

An improper design that fails to account for this can result in your products being accidentally crushed. Consult your packaging engineer.

Popular applications

Here the most common types of protective packaging that can be made from corrugated plastic:

Boxes and containers

These versatile solutions range from standard rectangular boxes to custom-shaped containers, offering secure storage and transportation for a wide variety of products. Collapsible and stackable options enhance convenience, closed-loop returnability, and space efficiency.

Bin Boxes

A long-lasting and economical solution for storing or shelving products or equipment for lengthy periods of time.

Dividers and partitions

Designed to organize and separate items within larger containers, these internal components prevent product-to-product contact and damage. They can be vertical, horizontal, or arranged in customizable grid systems to accommodate different shapes and sizes.

Trays

Many companies use plastic corrugate trays on conveyors in their warehouses to move products internally through the packaging process. Nestable and stackable designs optimize space.

Sleeves and wraps

These protective elements shield vulnerable parts of products, such as edges and corners, from impacts and abrasions during handling and transit. Custom-fit sleeves can be designed to encase specific product shapes.

Protective sheets

Used as interlayers or separators, these sheets prevent scratching and damage between stacked or bundled products. They can also serve as slip sheets for easier handling of palletized goods.

Specialty packaging

Addressing specific protection needs, these solutions include anti-static packaging for electronics, moisture-resistant designs for sensitive goods, and temperature-controlled options for perishables or temperature-sensitive products.

Totes

Plastic corrugated totes are highly customizable and can include foam, plastic, or a mix of both to protect the product. Totes can be customized with velcro, straps, buckles, handles, and more.

Capabilities you need in your plastic corrugated packaging supplier and fabricator

There are lots of fabricators and suppliers of plastic corrugated packaging products. Not all of them are equal. Here are some key considerations to keep in mind when selecting a packaging partner to help customize packaging protection for your product storage and transport needs.

Are they packaging engineers?

You don't want someone who's just a distributor. An experienced packaging engineer can be the difference between protection that works, and equipment that arrives at its destination broken. Their expertise can help you balance protective needs and cost, and customize both your plastic corrugated packaging and any required foam insert system for optimum performance.

Are they foam experts?

Polyethylene, polypropylene, polyurethane, and other protective foams all behave differently. The best partners have the expertise to identify the foam that will perform best to cushion and protect your application.

Can they design and fabricate plastic corrugated and foam in-house?

An experienced in-house engineering team backed with the latest manufacturing technology allows for greater customization options. Such partners can design and create precisely engineered plastic corrugated packaging and custom foam sets that provide a higher level of protection for maximum safety during storage and transportation.

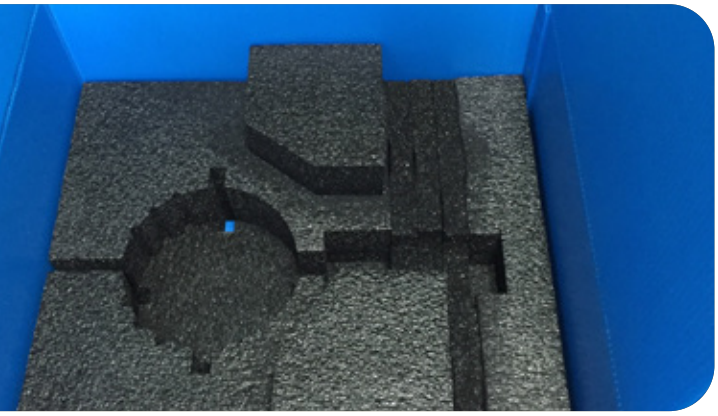
They will also very likely get it produced with a faster turnaround.

What are their typical lead times?

You must consider the scale of your needs and your timeline. Look for a partner with extensive inventory who can guarantee the ability to meet your demands on short notice.

Can they provide foam refurbishing?

In returnable and reusable packaging products, even the best foam sets will eventually require maintenance. Look for a partner that can update foam interiors as your needs change.



Organizations rely on us for:

- Rapid industry-leading lead times and turnaround
- Our complete prototyping and kitting service
- High-quality custom designs in standard and nonstandard sizes
- Efficient optimization for cost, weight, and performance

Larson Packaging Company:

Custom plastic corrugated and foam fabrication experts

We're business-to-business protective packaging experts, specializing in custom shock and vibration protective packaging solutions for high-value, fragile and sensitive industrial, military and technical equipment. Short lead time medium-sized runs are our specialty.

Our engineers can provide product-agnostic advice, and we can die-cut, stitch and sonic weld the optimal corrugated plastic solution that takes into account the fragility of the equipment or product, its transportation and storage needs, and the demands of the environment.

We are a specialist protective packaging fabricator, able to engineer customized foam cushioning, inserts and assemblies designed to perfectly complement any plastic corrugated packaging and ensure optimal protection from shock, impact, vibration, abrasion and even electrostatic discharge.

Our people understand the different physical properties and cushion curves of polyethylene, polypropylene, polyurethane, and other protective foams and how they interact with the weight, geometry, fragility, and sensitivity of a particular product.

We design your corrugated plastic packaging including foam inserts, for free, then fabricate the boxes at our in-house facility to exacting standards, on our tool-less boxmaker, and flatbed die-press with sonic weld or stitched seams.

We maintain an on-site inventory of many premium-quality foam types to be able to fabricate cushioning on short notice, and we specialize in rapid prototyping, complex assemblies, die-cuts, contour-cuts. Our CNC manufacturing capabilities include a high-speed WARDJet J-106 waterjet cutter that excels at rapidly cutting all commonly used foams while maintaining exceptional precision and end-quality.

Speed to market is critical. Delays can cost dearly.

Customers often tell us the packaging industry rarely fulfills commitments and that promises rarely turn out to be true guarantees.

We want to change this. That's why we make the following bold guarantee:

> **We will ship your packaging on the guaranteed date. Otherwise we will pay you a penalty for every day we are late.**

Our ship dates are guaranteed at the time of order acknowledgment, and we can deliver in as little as 24 hours for some items. We promise faster turnaround times, simplified packaging admin, and a frictionless vendor experience.

The importance of engineered foam in the performance of your corrugated plastic packaging

It has a very rugged exterior, but it is the foam cushioning system inside the case that prevents damage to your equipment or product from shock and vibration.

Custom engineered foam inserts typically provide optimal cushioning that isolates and protects each part or sub-assembly and secure parts against unexpected movement within the case. They're also surprisingly economical to makein low volume and one-off quantities, too.

Many different types of foam are available depending on the fragility, weight, and geometry of the product or equipment that is being protected.

For example, a drone or fragile electronic or optical component might use polyurethane whereas medical devices or semiconductor equipment might require a combination of polyethylene, polypropylene, and polyurethane foams.

Other aspects such as abrasion can be important if the shipping environment will cause the product or equipment to rub continuously against the foam. These are some of the reasons why you should rely on a packaging expert to identify the best solution for your product.

If your product has multiple parts, a custom foam insert can allow you to effectively organize the internal contents of your plastic package or box. That's because foam can be easily formed to fit different subassemblies or parts inside the package.

The benefits cannot be overstated. Unpacking and packing your products becomes much faster. For unique products it's also much less likely that something will be lost or forgotten due to oversight.

Additionally, a well-organized package interior presents a professional image and enhances the end-user experience.

Commonly Used Case Foams

All these foams can be cut and customized with a design to specifically complement your plastic corrugated packaging.

1 Polyurethane

Polyurethane (PU) is a common polymer used to make foam packaging. It has an elastic open-cell structure, and is relatively soft, which is especially useful for protecting delicate and lightweight items, those very sensitive to vibration or low g's such as gyroscopes, optics and sensitive electronics.

2 Polyethylene

Polyethylene (PE) is a chemical-resistant, closed-cell, non-absorbent foam that is impervious to mildew, mold, rot, and bacteria. A medium-weight polyethylene foam provides excellent protection for products that have average to low fragility. It is often used for goods such as communications equipment, and power supplies.

3 Cross-Linked Polyethylene

Cross-linked polyethylene (XLPE) foam is a high density, closed-cell foam with a compact feel and many of the same properties as PE foam. It can protect class "A" surfaces and will not scratch or mar high finish surfaces). XLPE is used extensively in the packaging of medical products and equipment.

4 Beaded Polyethylene

Beaded polyethylene foam (BPE) makes an excellent protective packaging because it has a soft surface, but is very rugged and firm. Consequently, BPE is frequently used for Class A surfaces such as medical equipment, semiconductor equipment, IT servers, automotive, robotics, and other instrumentation.

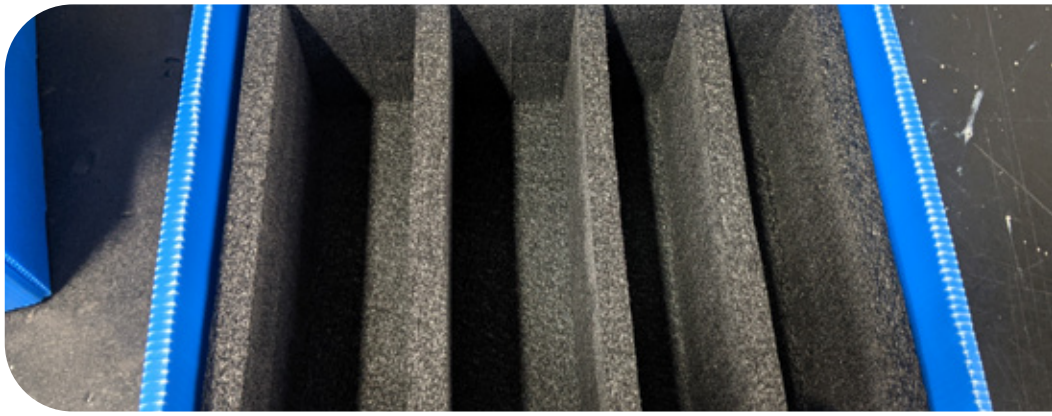
5 Static Control Foam

Most of these foam types are available in anti-static versions with varying degrees of effectiveness.

Designing Trays & Inserts

Foam constructs such as trays and inserts can have other benefits such as isolating and organizing separate components or sub-assemblies. Once the needs of the application are determined, a packaging designer will need to determine and specify:

1. Foam type
2. Density and performance characteristics
3. Bearing area, static loading and cushion thickness



We're business-to-business protective packaging experts, specializing in custom shock and vibration protective packaging solutions for high-value, fragile and sensitive industrial and technical equipment.

We have independent and in-house custom corrugated plastic and foam design and fabrication capability. Our lead times are among the shortest in the industry and we guarantee our shipout dates for the peace of mind of customers.

LARSON PACKAGING COMPANY

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