Material Handling Solutions and Custom Products

Pallets
Dunnage
Custom Products
PAK Shipping Systems
Engineered Plastic Parts Protection

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TriEnda Is A Manufacturer Of Heavy-Gauge, Single & Twin Sheet Thermoformed Plastic Products


Light-duty to heavy-duty. Distribution, export, hygienic, nestable, one-way, plastic, stackable, returnable, reusable & thermoformed pallets.

Available in different colors & configurations. Used in the following industries: Automotive, agriculture, government, grocery, wholesale/retail, export, textile, and many other industries.

Employees: 100-199
Activities: Manufacturer, custom manufacturer
Year company founded: 1975
Export markets: Europe, Canada, Mexico, and Australia

In today's world, packaging and freight are generally the second largest cost drivers. TriEnda has a rich history of developing innovative solutions to help customers reduce these costs.
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Company Profile

Year Company Founded: 1975

Manufacturer of heavy-gauge, single and twin sheet thermoformed plastic products for the material handling & packaging industry.

Light-duty to heavy-duty. Distribution, Export, Hygienic, Nestable, One-Way, Plastic, Stackable, Returnable, Reusable & Thermoformed Pallets.

Industries Served:
Automotive, industrial, chemical, agriculture, wholesale/retail, pharmaceutical, grocery, export, textile, and many other industries.

Engineering Design
• CAD/CAM applications allow our programmer's to visualize the custom product during the programming stage
• Maximize the complexity of part design and the optimization of performance
• Plastic processes are explored to generate infinite solutions

Prototyping/Sampling
• Reduces development time
• Reduces development costs
• Developers receive quantifiable user feedback
• Facilitates system implementation

Testing
• TriEnda continues to develop useful rating methods
• Eight ratings used in test methods: Floor, Fork, Rack, Conveyor, Slip Resistance, Durability, Pack (ratings for pallets converted to a package,) and Life Cycle (derating considerations are also addressed)

Machine Tooling
• Temperature controlled tooling
• Capable of producing a wide range of production parts
• We can customize tooling for your production needs

Equipment
• Rotary thermoforming machines - Tool sizes up to 124” x 130” x 40” deep
• Single station prototype machine
• CNC and robot trim capabilities
• In-House tool repair, forming gauge/material thickness .060 – .450

Packaging Management
Product packages generally ‘live’ in different types of locations
• RFID tags and Real-Time Locating System (RTLS), pinpoint the location of packaging within the “virtual warehouse”
• An asset can be identified with an RFID tag and multiple antennas/readers

Global Services
• Europe
• Canada
• Mexico
• Australia
Customers are assured that our processes and procedures meet a wide range of stringent national and international quality requirements.

- Six Sigma Black Belt / Green Belts on Staff
- Design Validation and Testing Capable
- Industry leader in establishing testing procedures and pallet standards
- Promote a Customer focused business environment that results in ever improving processes, products, and services

It is our policy to continually improve our processes and Quality Management System to ensure our customers receive quality product, on time, at a competitive price.

**Packaging/Material Handling Supplier to:**
- HONDA
- CHRYSLER
- GM
- FORD
- UNITED STATES POSTAL SERVICE

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**Quality Program**

**Recycling Program**

**Environmentally Responsible.**

At one time about 20% of the trees cut in the US went into pallets and shipping containers. Many were one-way pallets that went to the landfill after a single use.

Times and attitudes have changed. Landfills are fewer, more selective and more expensive. People recognize that preserving trees benefits the ecology of the planet. Recyclable plastic pallets are the perfect alternative. Their long lives keep wood pallets out of landfills and when they need replacement, they can be ground and molded into new plastic products.

In addition, some pallets can be made from recycled plastic, preserving even more landfill space.
The challenge for design engineers and manufacturers is to find the most economical balance of resin, mix, shape, and production characteristics that meets the customer's performance expectations.

TriEnda uses cutting-edge processes, Thermoforming and Sheet Extrusion, to meet the demands of your budget and timeline.

### Single Sheet Thermoforming

This process is when a single extruded sheet is heated and positioned over a horizontally oriented mold and sealed at its perimeter.

The air between the mold and heated sheet is evacuated and atmospheric pressure forces the sheet to conform to the surface of the mold. Plugs, which help stretch the material to create vertical wall thickness, are used to optimize material distribution to critical areas. Material handling industry products, such as; pallets, totes, trays, containers, and components are manufactured using this process. Other advantages of this process include, low cost prototype parts, low cost tooling, partially encapsulated substrates, and the full range of options associated with extruder sheet.

### Twin Sheet Thermoforming

This process heats two individually engineered sheets, on two individual molds, positioned horizontally; one above the other.

Before the two sheets are brought together to form a single welded part, a stiffening substrate can be positioned between the sheets, which then is encapsulated by the welding step. The large size of Twin Sheet Thermomforming (TTF) machinery, and the high cooling capacity of twin molds, provide relatively high processing volumes. The combination of high material distribution efficiency and the ability to weld two individually engineered sheets together provide high performing hollow light weight structures. Low cost custom prototype parts and moderate cost molds are additional benefits unique to TTF.
### Extrusion

The process of extrusion is when plastic resin is converted from solid to liquid.

This process, known as screw extrusion, is the first step for several manufacturing processes. It can be described as a large continuously rotating screw inside a heated tube. Plastic pellets, powders, and/or liquids enter one end of the tube and are conveyed, melted, mixed, and pumped out into a molding process, which form plastic products used in the material handling industry.

### Secondary Processes

<table>
<thead>
<tr>
<th>Robotics</th>
<th>CNC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robotic router trimming technology is a fast and efficient material separation process. Easily process more complicated parts per hour while reducing downtime and improving employee safety.</td>
<td>Computer Numerical Control router provides high quality part finishing and repeatability. Typically used on higher volume production or where precise dimensional tolerances are required.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Finishing</th>
<th>Hot Stamping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilizes hand held router for small volume, short run production where formed parts are trimmed resulting in a good quality trim edge.</td>
<td>Company logo or phrase can be displayed on deck surface and/or edge in specified locations.</td>
</tr>
</tbody>
</table>
PALLETS

**Distribution Series**
- Safe, clean and durable shipping platforms that are designed to meet the needs of multiple markets
- Replace traditional wood pallets which splinter and soak-up fluids
- Safe, sanitary, and durable
- Light-duty to heavy-duty

*Designed to meet the needs of grocery, food service and wholesale/retail markets, these pallets can bear interlocking column floor loads up to 10,000 pounds and interlocking column fork loads up to 3,000 pounds.*

**Big Pak With Ever-Lok®2**
- Big Pak’s are available with mirror image (pallet and cover are inter-changeable), or non-interchangeable (pallet and cover are individual forms).
- Sleeve’s that are collapsible
- Stack higher and safer
- Reduce damage to your payload
- Ever-Lok®2 locations for package/unit security, also eliminates the need for stretch wrapping

**Custom Pallets**
- Plastic pallets entered the material handling industry in a wide variety of designs and materials. Today, TriEnda offers its customers a recognized brand and award-winning innovation.
- We use our experience to produce a winning solution for you
- TriEnda uses single and twin sheet thermoforming process
- Our design engineers are able to create the strongest, most durable pallet in the industry

**Systems Pallet**
- Single continuous deck – efficiently converts standard pallets into rackable and conveyorable pallets for automated storage and retrieval systems (ASRS)
- Pallet can be customized to accommodate any conveyor system
Automotive

TriEnda’s BPG & BPC Series offer nine specially designed pallets. These twin-sheet thermo-formed high-density polyethylene plastic pallets are lightweight, durable, and made to last.

All Big Pak’s are:
• Returnable • Reusable • Recyclable

The 18-leg mirror image design allows the pallet to be used as a cover. Automotive Platforms come with a standard 4-inch stripe – stripe colors are specific to the Pak size for easy identification on all BPG Series pallets.

International

• BIG PAK SERIES, BP1012
• DC SERIES, DC1-0812, DC41012
• SYSTEMS PLATFORM
• ISPM

Benefits of Pallets

• Plastic pallets are uniform in size, shape and weight
• Plastic pallets won’t warp, shrink, change mass or absorb moisture over time
• Plastic pallets are nestable, take up less warehouse/shipping space and are easier to store and handle
• Plastic pallets have a longer life-cycle that reduces total cost of ownership as well as operational expenses
• Plastic pallets are attractive and can be made in custom colors and hot stamped for easy identification
• Plastic pallets are ergonomic
• Plastic pallets are lightweight
• Plastic pallets are easy to handle/worker friendly

Export

• A low cost one-way shipping alternative to wood, especially for overseas shipments
• Made from HDPE – environmentally friendly and 100% recyclable
• Textured deck creates an anti-slip surface for a more secure load
• Lightweight for better ergonomics/worker friendly
• Nestable – conserves space and reduces shipping costs
• Low profile maximizes storage and transportation space

Safe, clean, and durable. Our pallets are designed to meet the needs of multi-markets
Automotive Dunnage

Our single and twin-sheet pallets, trays, and caps, when combined, create a shipping and handling unit.

Whatever your automotive material handling challenge is, we’ve solved it before. We have the power to create automotive dunnage that can house virtually every part that hits your line – in runs from one hundred to hundreds of thousands. Using the most advanced CAD systems, our engineers will translate your job specifications into products that precisely match your material handling needs.

TriEnda offers value added options like labeling, color- and bar-coding for easy tracking. Plus anti-skid materials and specially molded surfaces that reduce product damage.

Made with certified high-density polyethylene material, these units are returnable, reusable and recyclable.

You can order standard dunnage, or we can customize a system to protect large or small parts, simple to complex.

Our team’s earned:
• ISO 9001:2000 Certification
• More than 25 U.S. and international patents.

In these capable hands, your project gets done faster – typically flowing from:
• Concept
• Prototyping/Sampling
• Testing
• Tooling
• Production

Tail Light Bezel Trays
Our plastic dunnage provides the environmental benefits wood and cardboard can’t. It’s clean, lightweight, nestable, collapsible, recyclable and it helps you achieve a zero-waste facility. Best of all, plastic is a cost-efficient protection alternative.

Plastic dunnage is strong. Our on-site testing facility ensures top-notch performance before the dunnage reaches your door. Be it simulating environmental conditions or real-world performance examinations, ask us about our testing capability for your custom application.

Industry Leader. Our uniform performance tests are among the industry’s highest caliber.

TriEnda offers a dunnage buy-back policy. We purchase and reprocess unusable dunnage to make your next order even more economical!

Plastic meets the objectives of today’s JIT assembly process. It increases return on investment, and solved ergonomic, tracking and compatibility issues.
Innovative and cost-effective designs

One-Stop Shop

TriEnda has integrated the various types of reusable packaging products and services to create integrated packaging solutions for our customers. Whether it’s a simple plastic reusable product, or highly complex product with engineering challenges, TriEnda has the expertise to meet these packaging and material handling needs like no other.

This unique approach to the market offers customers a company that can provide a “one-stop shop” for packaging solutions.

Automotive Industry Action Group (AIAG) compliant.

TriEnda can solve your custom product packaging applications.

At TriEnda we:
• Listen
• Diagnose
• Design

Wheel Trays
• Made with certified high-density polyethylene material
• Units are returnable
• Units are reusable
• Units are recyclable

Wheel Pak

Clam Shell

Bookleaf Firewall Rack

Airbag Tray

Clam Shell

Clam Shell
Pack Dunnage

Covering over 300,000 square feet of state-of-the-art manufacturing space, we design and manufacture a variety of single and twin-sheet thermoformed plastic products in a variety of sizes, shapes and thicknesses.

We pride ourselves on versatility.

We have the quality systems to produce your products to the highest standards. Our certified-tested stamp serves as an additional sign of our quality commitment, assuring our products will meet or exceed your performance expectations.

Dunnage may be shipped on a pallet or in a container. The trays are single or twin-sheet custom design.

There are two basic types:
- Weight transfer - through the part
- Weight transfer - through the tray
**PRODUCT OPTIONS**

### Product ID and Stabilization

**COLORS/STRIPES**
- 8 common color options

**HOT STAMPING**
- Company logo or phrase can be displayed on deck surface and/or edge in specified locations.

**LABELING**
- Recessed space on single and twin sheet products allows for placement of bar-coding, sequential numbering, and/or company logo.

**FORMED-IN**
- Company logo or phrase can be displayed on deck surface and/or edge in specified locations.

**CARGO BELTS**
- Belts fasten top and bottom pallets to secure products while in-transit.

**EVER-LOK2®**
- Patented lock secures sleeve to pallet for additional safety and security during shipping.

### Performance Enhancements

**IN-DECK SUBSTRATES**
- Metal “I” beams are encapsulated within pallet for increased strength to support heavy and/or racked loads.

**STANDARD GRIP-LOK**
- Tacky polymer formed onto the pallet surface through a patented co-extrusion process.

**HAND HOLES**
- Assist in handling of pallets and trays.

**TEXTURED DECK**
- Grid pattern, designed exclusively for DC pallets, prevents sliding.

**DRAIN HOLES**
- Drain holes eliminated fluids inside pallet legs.

**ANTI-SKID DEVICE**
- Rubber pad affixed to the bottom of DC4-4048 and DC4-4248 pallet legs.

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Most product options will incur a set-up charge and/or additional costs. Options may not be available on all products. Colors may vary during production. Consult your TriEnda representative.