A CORRUGATED REVOLUTION

THE NEW RETURNABLE

P2Packaging

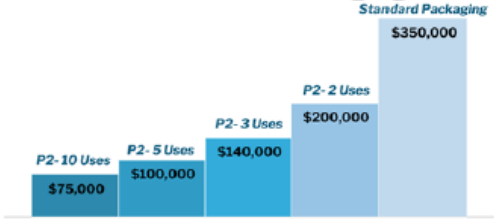
P2Packaging

2024 LCA Results

Discover the Sustainability Impact of P2 Packaging:
Our comprehensive Life Cycle Analysis (LCA) demonstrates measurable benefits, including:

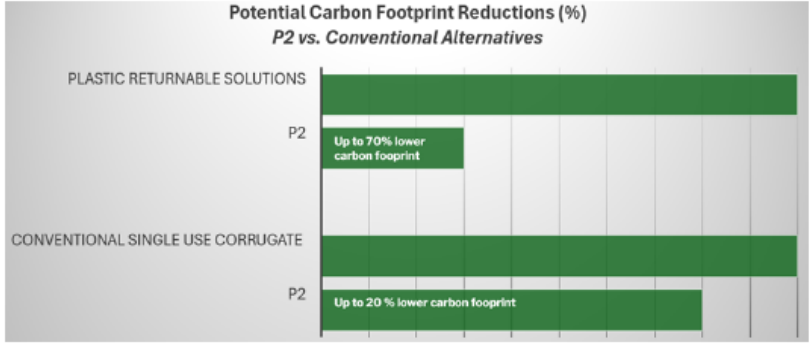
- **Significant cost savings**,
- **Reduced carbon emissions**,
- **Minimized waste**,
- **Enhanced circularity**, and
- **A durable, reusable alternative to traditional plastic packaging**.

Potentail Cost Savings Example
P2 vs. Standard Packging



Cost Savings

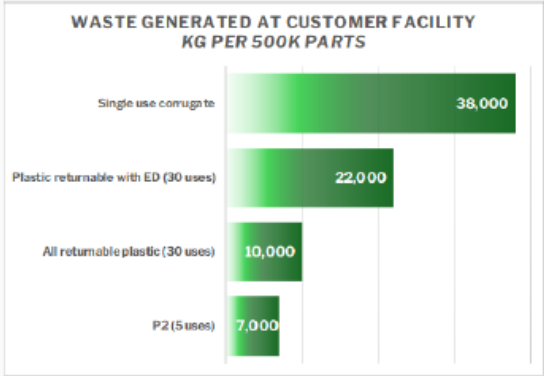
The reusability of P2 Packaging along with efficiencies in cube and transportation could result in up to **50% to 70% reduction** in packaging related costs.



Potential Carbon Reductions*

The case study included in the LCA estimated CO2eq per 500,000 B trim parts shipped in plastic returnable, conventional single use corrugated, and the P2 Packaging solutions.

- P2 Packaging reduces up to 300 metric tons of CO2eq (a **70% reduction**) compared to plastic returnable solutions
- P2 Packaging reduces up to 30 metric tons of CO2eq (a **20% reduction**) compared to single use corrgated packaging



Waste Reduction

In the case study involving the delivery of 500,000 trim B parts, there is significantly less waste anticipated when using P2 Packaging (5 reuses) for all packaging types. **Up to 15,000 kg of waste avoidance** is estimated when using P2 Packaging versus plastic returnable with expendable dunnage.

Improved Circularity

P2 Packaging allows businesses to **embrace a regenerative approach to packaging** through circular principles that prioritize keeping materials in use, designing out waste, extending product life, and conserving resources.

Reuses **10x**

Recyclability **100%**

Plastic Content **0%**

HISTORY OF CORRUGATED BOXES

1856

Corrugated Paper is patented in England for use as a liner in top hats

Single faced kraft patented in New York and used for wrapping glass

1871

1890

First corrugated boxes manufactured in bulk

Wells Fargo first uses corrugated boxes for shipments

1894

1970's

The beginning of widespread corrugated recycling

Finally something new !!

2015

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CORRUGATED BOX INDUSTRY TODAY

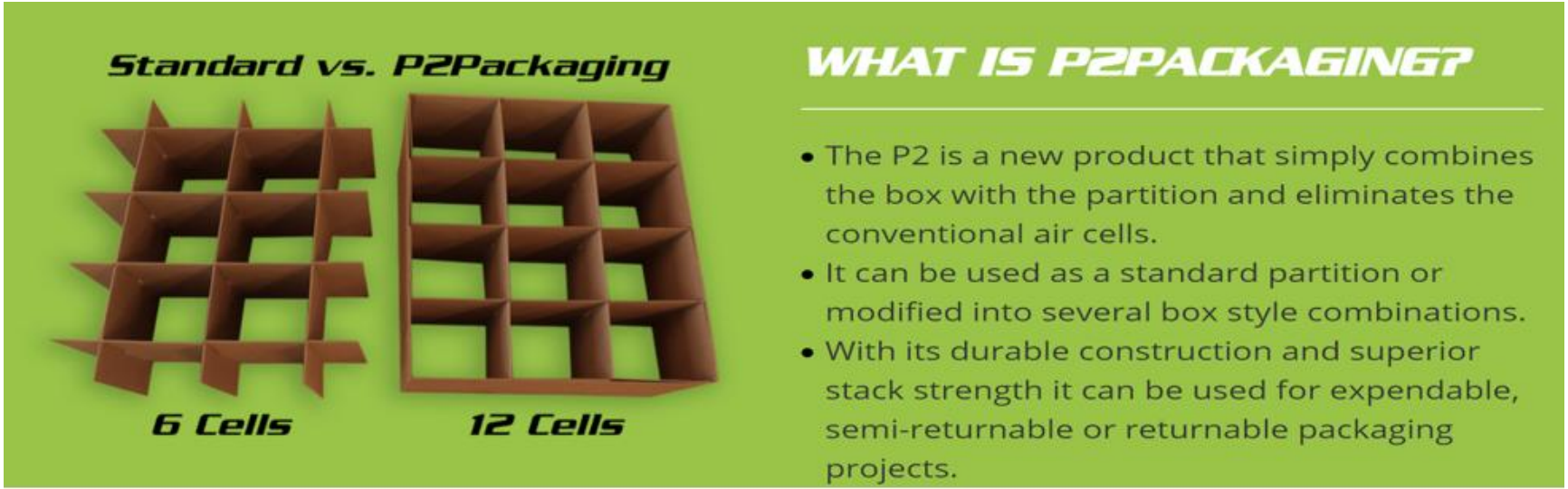
More than 95% of all goods consumed in North America are packaged and transported in corrugated packaging.

Due to the explosion of E-commerce an estimated **100 BILLION** corrugated boxes will be manufactured in North America this year. This is roughly the equivalent of 80,000 acres of trees.

The general perception is that corrugated boxes can only be used once and 99.9% of all cartons are thrown away after a single use. Although most corrugated is recycled, we still have millions of tons of corrugated packaging that ends up in the landfill.

P2 Packaging is changing that mindset, and our unique design will not only help with your sustainability goals, it can save you millions of dollars in the process.

WHAT IS A P2 PACKAGING DESIGN?



BOX & PARTITION COMBO THAT IS GLUED TOGETHER.

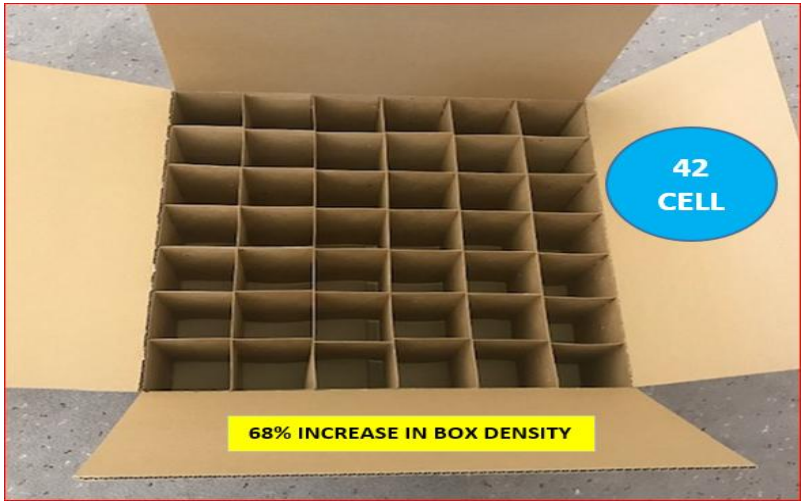
P2 DENSITY IMPROVEMENT EXAMPLE

Ford Pull Handle

Original Packaging

Skid Density = 500

New P2 Design



Skid Density = 1008

101% INCREASE

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P2 PACKAGING BENEFITS

INCREASED CONTAINER DENSITY

- Lower packaging cost
- Lower freight cost
- Less material handling requirements
- Less storage space

DURABLE DESIGN ALLOWS THE BOXES TO BE REUSED

- Boxes collapse completely flat
- Over a 10:1 return ratio
- Data shows it's possible to get over 10 turns from a single box

A COST-EFFECTIVE SUSTAINABLE PACKAGING OPTION

- A critical element of the circular economy
- Saves resources & reduces your carbon footprint
- Easily recycled

FORD DOOR PANEL P2 COST SAVINGS

	ANNUAL MATERIAL COST				ANNUAL FREIGHT
	SINGLE USE	P2 REUSE ONCE	P2 REUSE 3 TIMES	P2 REUSE 6 TIMES	
TRADITIONAL PARTITION DESIGNS	$ 1,744,668				$ 3,113,681
P2 PACKAGING DESIGNS	$ 2,106,351	$ 1,213,244	$ 781,626	$ 596,647	$ 2,259,013
	$ (361,683)	$ 531,424	$ 963,042	$ 1,148,021	$ 854,668
TOTAL PROGRAM SAVINGS	$ 492,985	$ 1,386,092	$ 1,817,710	$ 2,002,689	

- Savings include the cost of returning the partitions to Mexico.
- Total of (10) different parts for this program.

- **P2 has generated almost $10 million in savings over the past 2 years at Yanfeng.**

FORD DOOR PANEL FREIGHT COMPARISON

Saltillo, Mexico ⟷ Holland, Michigan

1700 Miles

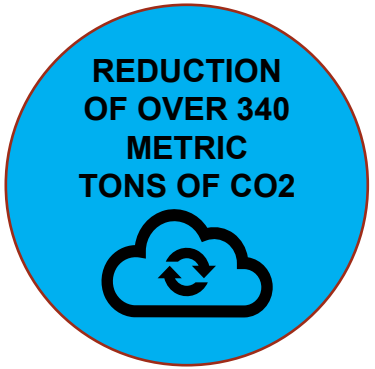
10 Different Parts

ORIGINAL PACKAGING

Requires 753 Truckloads per YEAR

P2 DESIGN

Requires 547 Truckloads per YEAR



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FORD DOOR PANEL CORRUGATED ELIMINATION

ORIGINAL PACKAGING

Average box = 78 ft^2 of material

Boxes per year = 191,394 (single use)

Total ft^2 of material = 14,928,732

P2 PACKAGING

Average box = 77 ft^2 of material

SINGLE USE

Boxes per year = 135,783

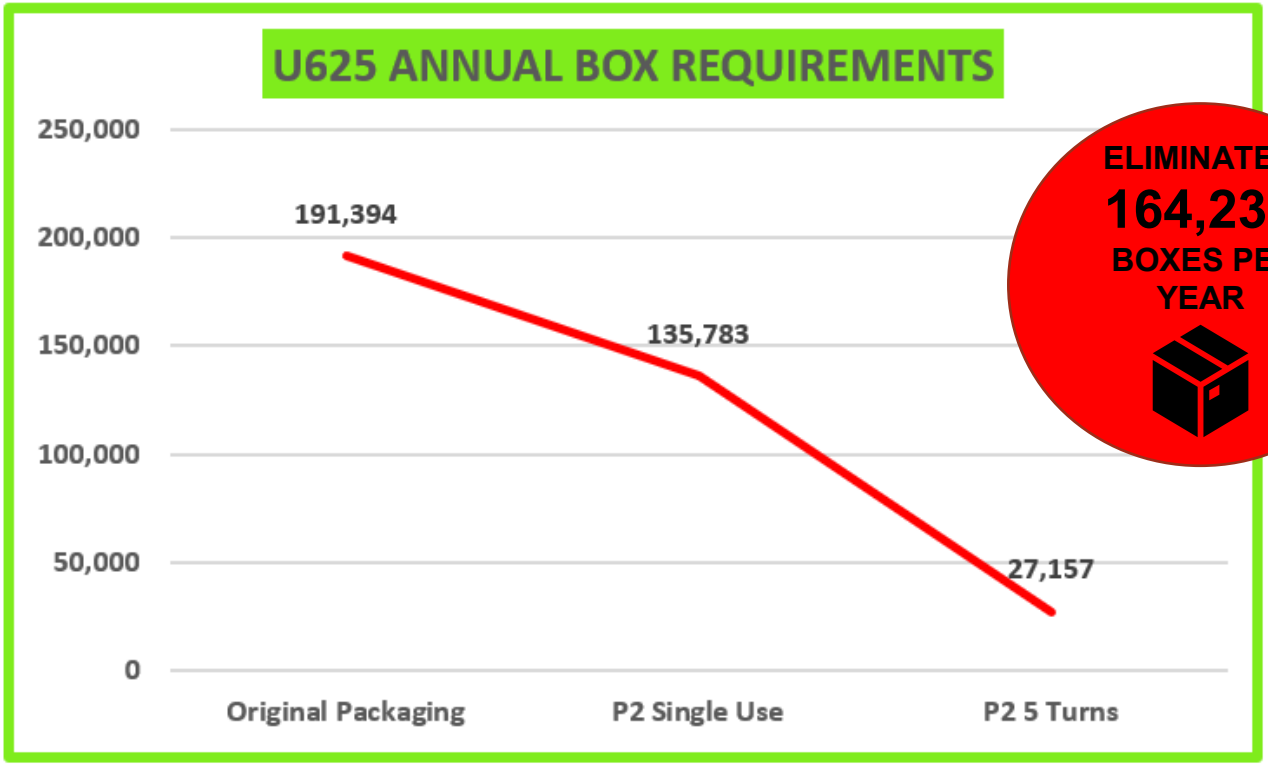
Total ft^2 of material = 10,455,291

5 TURNS

Boxes per year = 27,157

Total ft^2 of material = 2,091,058

FORD DOOR PANEL PACKAGING ELIMINATION



TESLA APPLIQUE EXAMPLE

ORIGINAL PACKAGING

Box Size: 39 X 23 X 10

Density: 12 Parts

Skid Density: 96 Parts

Truck Density: 5760

ELIMINATED 58 TRUCKS PER YEAR

$230,000 FREIGHT SAVINGS

P2 DESIGN

Box Size: 24 X 13.25 X 38.75

Density: 32 Parts

Skid Density: 192 Parts

Truck Density: 11,520

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DECO TRIM CASE STUDY

PACKAGING COMPARISON

Annual Volume = 1,040,000 parts
Part ships from Michigan to Texas

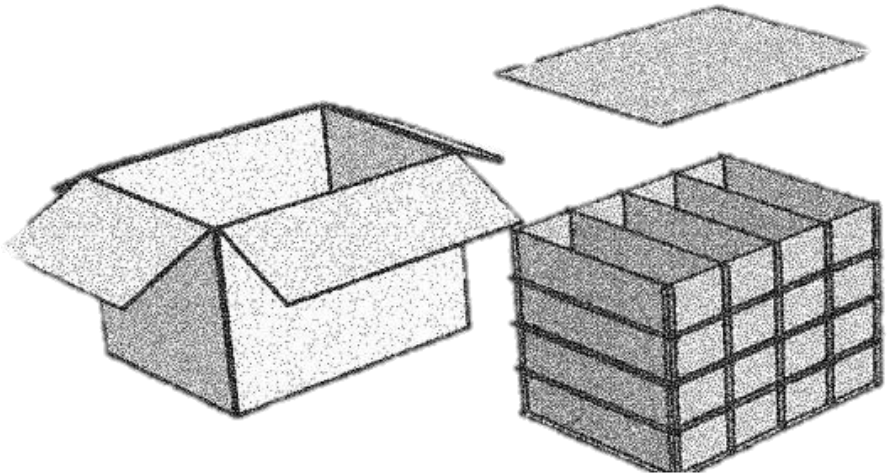
DECO TRIM CURRENT PACKAGING

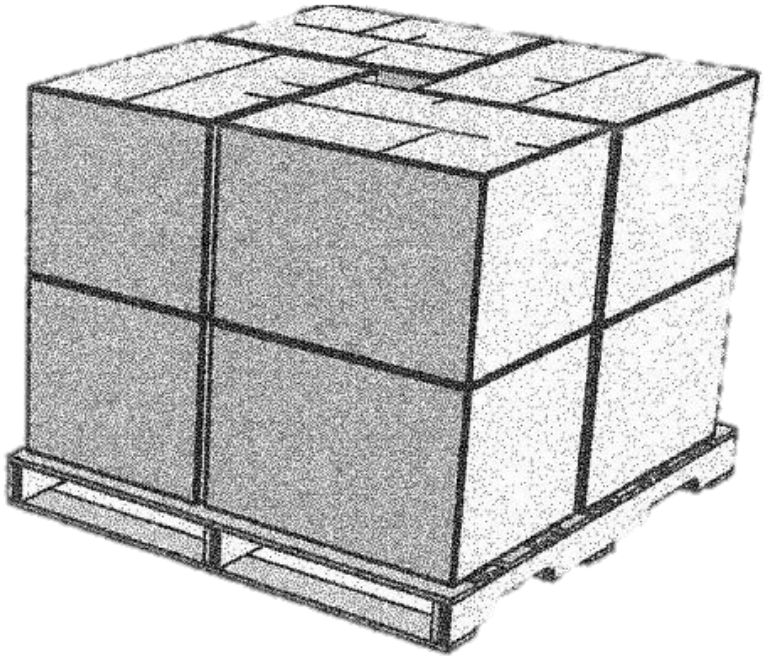
16 parts/box

128 parts/pallet

157 Truckloads per year

Annual freight cost = $538,194





DECO TRIM PROPOSED RETURNABLE

Molded EPP Tray & Returnable Pallets

6 parts/tray

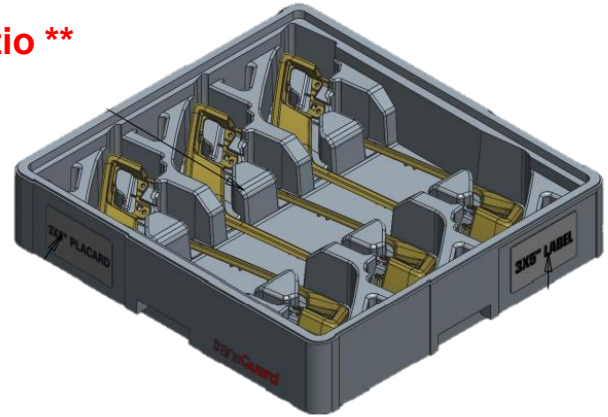
216 parts/pallet

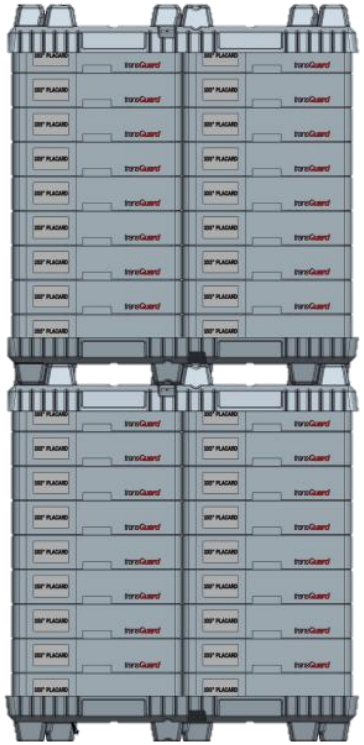
93 Truckloads per year

Annual round trip freight cost = $637,860

**** Includes return freight at 1:1 ratio ****

Requires capital investment of $250,000





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DECO TRIM P2 OPTION

28 parts/box

224 parts/pallet

90 Truckloads per year

Annual freight cost = $307,540

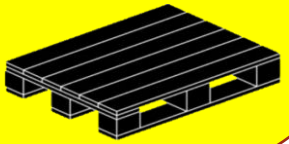
- No capital investment required
- Can be implemented quickly
- Immediate savings

DECO TRIM P2 SUMMARY

USING THE P2 DESIGN

75% INCREASE IN BOX DENSITY

88% INCREASE IN PALLET DENSITY



75% INCREASE IN TRUCK DENSITY

Annual packaging cost savings $205,777
Annual freight savings $230,654

TOTAL P2 SAVINGS = $435,000 ANNUALLY

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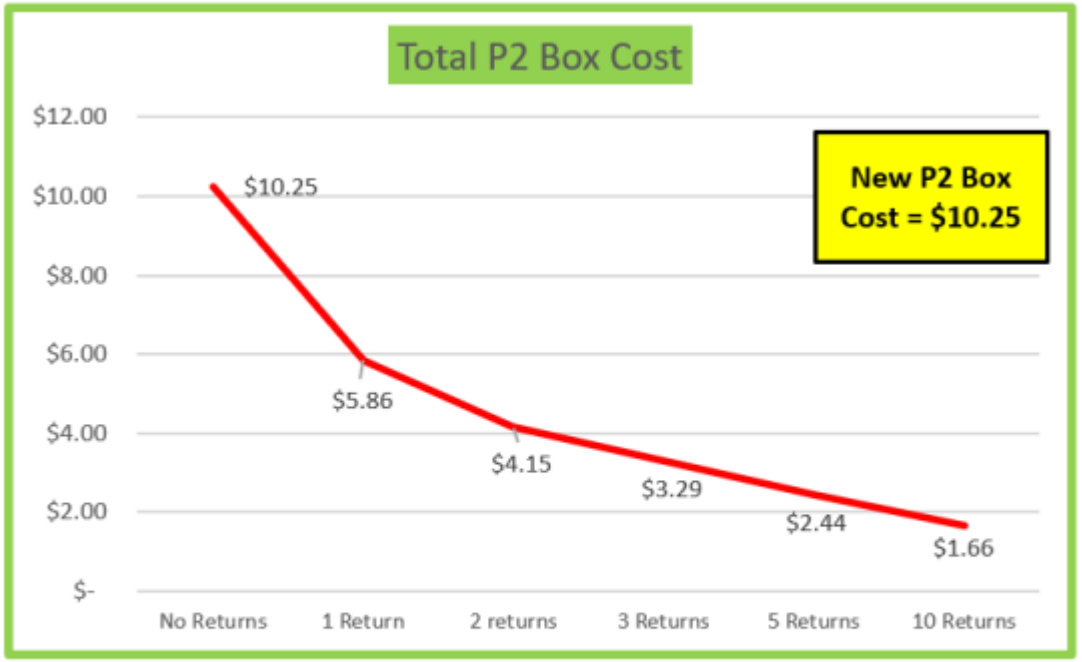
P2 BOX REUSE COST SAVINGS



Includes P2 return cost
(freight and overpack expense)

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P2 RETURN EXAMPLES

Pictures of P2 packaging that has been collapsed and stacked inside an overpack box for the return shipment.

P2 returns to Mexico cost approximately $0.60 to $1.20 per box.

Data shows upwards of 10 returns per box

RETURN RATIO OF OVER 10 TO 1

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SHIPPING P2 BOXES

P2 boxes collapse completely flat and palletize nicely for efficient shipping and storage.

P2 boxes consolidated in an overpack for return shipment to Mexico.

INCOMING P2 PAKAGING

Warehouse pictures of P2 packaging.

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TRADITIONAL PACKAGING STORAGE

Common examples of current packaging storage.

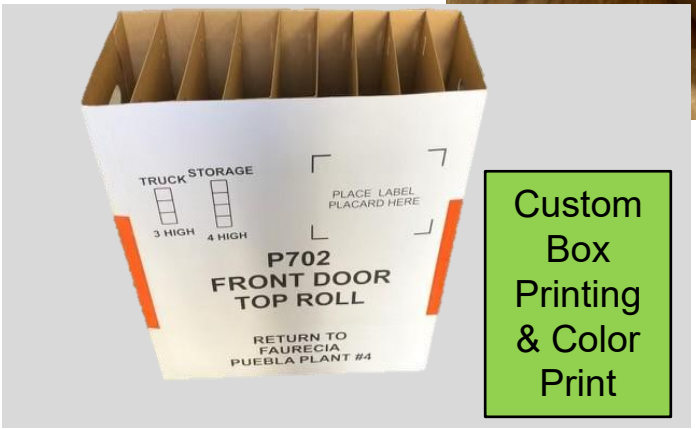
P2 design is glued together so you have almost no loss or scrap damage.

Less storage space required.

P2 OPTIONS & FEATURES

Material Options

- Single and double wall corrugated
- Different flute types (C & E)
- Polychip & NOMAR for Class A part protection
- Plastic Corrugated



TESTIMONIALS

Detroit Free Press Article – A Treasure Chest For Automakers, Oct. 7, 2021

'Staggering'

This box has made a big difference.

"The numbers are staggering," said Larry Ross, program logistics manager for North America operations at Faurecia Interior Systems, who is based in Auburn Hills.

Everything is intended for long-distance transport of parts. The companies are shipping wrapped components in vinyl or leather, such as armrests or bolsters that go on doors or instrument panels. So-called "trim pieces" in industry jargon.

Ross

These boxes are not used to ship huge pieces but, rather, a zillion little bits.

"Now we're comparing the one-way box to P2 and it's green. We reuse and no longer throw material into the dumpster daily, compared to what we did before," Ross said. "When you can get twice the amount of parts on a truck, the numbers are staggering. We're gaining efficiencies from just a box."

"It's crazy," said Andrew Hurley, associate professor at Clemson University and founder of packagingschool.com. "Think about the automotive space. Some vehicles have 30,000 parts and some parts have seven packages. A car company has to manage more packages than they do car parts."

But the simple box changes everything.

While Michigan State University is recognized for its packaging programs, Clemson has developed a subspecialty in automotive design packaging that has been especially helpful to development of his product, Youell said .

"The package is very simple. And the beauty of it is that it's a returnable package using expendable materials," Hurley said. "You look at Amazon boxes, which have one purpose in life: To go from Amazon to you. But this P2Packaging, well, I got to take a tour of a parts manufacturer and saw it being used. There's no bubble wrap or wadded-up paper. You don't have to track it or worry about people stealing it. If you lose it, no big deal. Just way past what you'd expect of a brown box."

Thing is, the corrugated fiberboard container has been around since the 1800s.

Colclough

factory in Mexico to be used again.

"As a packaging engineer, not a whole lot that comes down the pike moves the needle," said David Colclough, a Michigan State Packaging Engineering graduate who has spent 30 years in the automotive packaging industry. He is the North American packaging buyer for Yanfeng Automotive Interiors based in Holland, Michigan.

"All the stuff is just mundane purchasing and packaging," he said. "But this P2 product, I can't emphasize how beneficial it's been to Yanfeng. When you come across something that literally saves millions of dollars, it's just not something that you encounter very often. It surprises me that not everybody is using this product. It's so simple."

MEDIA COVERAGE

Detroit Free Press

Automotive News

PACKAGING WORLD

AUTOMOTIVE PACKAGING SUMMIT

USA TODAY

PACK EXPO INTERNATIONAL

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