



# BETTER SUSTAINABLE SHOEBOX

Sustainable SIOC-Compatible Solution



# Project Context & Challenge



Our client has made strides in sustainable footwear, **yet its packaging lags behind**.  
The Current Tech Box still relies heavily on virgin paper and petroleum-based dyes.  
**Packaging accounts for up to 6% of total carbon footprint** — and with millions of shoes sold annually, the cumulative environmental impact is substantial.



Current box uses virgin paper & petroleum dyes



Goal: 100% recycled & SIOC-capable solution



Packaging = up to 6% of carbon footprint



Millions sold annually amplifies the impact

# Methodology

Our four-phase methodology guided the development of a 100% recycled, SIOC-compatible shoebox.

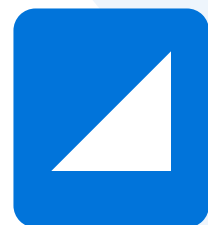
Each phase built systematically on the last — **from stakeholder needs through rigorous mechanical and user testing** — ensuring a practical, validated, and scalable sustainable packaging solution.



Need Assessment



Research & Benchmarking



Design & Prototyping



Mechanical & User Testing



# Research Insights & Competitive Benchmarking

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Industry analysis of leading footwear brands reveals key packaging innovations and limitations. Standards including FSC certification and ASTM durability testing define the benchmark for sustainable, distribution-ready shoebox design.



Competitors: Nike, Puma, Adidas, etc — varied recyclability and handling features



Standards: FSC certification & ASTM durability and closure testing requirements



Challenges: Handling ease, closure reliability & recyclability trade-offs



Distribution efficiency: SIOC compatibility and reduced overbox requirements



# Design Iterations & Prototyping

Over **80 design iterations** were conducted to explore structure, handling, and closure methods.

**CAD modeling and laser-cut prototypes** enabled rapid testing and refinements.

Each iteration informed the next, narrowing toward an optimal solution that **balanced sustainability, durability, and ease of use for distribution center**.



Handling Types: Double/triple-layer thumb holes, protrusions designs for ergonomics.



Closure Options: 3M adhesive strips, water-activated tape options evaluated for reliability.



Rapid Prototyping: CAD models and laser-cut cardboard prototypes used for design refinement.



# Mechanical & User Testing Summary

Rigorous **ASTM-standard mechanical tests** and **on-site user trials** at a distribution center were conducted to validate the final shelf design. Results confirmed structural integrity, closure reliability, and strong worker preference for the proposed dimensions.

ASTM Mechanical Tests

User Testing Results

Closure Testing Outcomes

# Sustainability Benefits & Conclusion

Constructed from 100% recycled, fully recyclable corrugated cardboard, the box is fully SIOC (Ships In Own Container) compatible.

The final design represents a meaningful leap forward in sustainable packaging.

Built from **100% recycled and recyclable corrugated cardboard** — it eliminates petroleum-based dyes and removes the need for overboxes or polymailers. Each shipment reduces **CO2 emissions by 0.4–0.65 kg**.

With millions shoes sold annually, this solution delivers a scalable **~6% reduction in carbon footprint**.

A practical, tested, and scalable sustainable packaging solution for our clients future.



**100% recycled & recyclable corrugated cardboard**

NO - virgin paper and petroleum dyes.



**Reduces 0.4–0.65 kg CO2 per shipment**

NO - overbox and polymailer



**Scalable impact: ~6% carbon footprint reduction**

Also - FSC certification pathway included.



**THANK  
YOU**

