HUAYUE GROUP | CASE STUDY

CASE #01 · PALLETIZATION & LOGISTICS

Eliminating Wasted Pallet Space Through End-to-End Fold, Carton & Custom Pallet Engineering

Client: Canadian Packaging Retailer **Scope:** End-to-End Packaging Architecture & Custom Palletization

CHALLENGE — The "2-Carton" Pallet Bottleneck

The client needed to palletize retail color-boxed products onto a compact pallet. Under the original spec, **two master cartons fit side-by-side**, leaving an awkward gap too narrow for a third carton.

That wasted dead space inflated landed freight cost per unit and left cartons exposed to load shifting and edge crushing in transit.



The Loading Dilemma: Overhang vs. Dead Space
On a standard pallet, forcing a 3rd carton caused risky overhang (left)—leaving it off wasted critical dead space.

SOLUTION — Inside-Out Structural Engineering

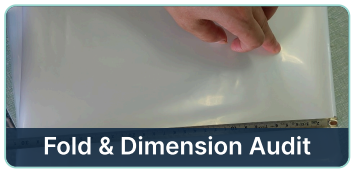
Rather than resizing only the outer carton, Huayue rebuilt the full packaging stack in four stages:

01 **Fold Redesign:** Re-engineered product folding to slim box dimensions, unlocking **15%+ more cargo per container**.

02 **Color-Box Sizing:** Engineered & sampled **5 retail color-box** options for a snug fit.

03 **Carton Matrix:** Modeled **8 master carton** sizes across inner-box stack patterns.

04 **Custom Palletizing:** Built a custom pallet for **100% flush support**, cutting damage **20%+**.


Fold & Dimension Audit


100% Flush Pallet Stack

STRUCTURAL COMPARISON — TOP-DOWN PALLET FOOTPRINT

Synchronizing Carton Geometry with a Custom Pallet Eliminated Dead Space

BEFORE: STANDARD PALLET MISMATCH



3rd carton cannot fit → wasted freight cube
Unbraced gap causes shifting & edge damage

Huayue Re-Design → New Fold + 5 Boxes 8 Cartons + Custom Pallet

AFTER: FLUSH CUSTOM PALLET FIT



Zero dead space · 15%+ higher container load
Full deck support cuts carton damage 20%+

15%+
Higher Container Capacity
More sellable units shipped per container by eliminating wasted pallet space.

20%+
Lower Carton Damage Rate
Reduced transit crushing through flush carton-to-pallet deck support.

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Box & Carton Options Tested
Color-box & master-carton layouts modeled before custom palletizing.

Conclusion — Why Global Retailers Partner with Huayue Group

Most factories only quote the dimensions you send them. Huayue engineers the full stack—product fold, retail box, master carton, and custom pallet—lowering landed cost per unit while keeping goods intact through global transit.

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