

Customer Solutions

Package Design and Test Lab
108 South Lombard Road
Addison, IL 60101
Phone: (877) 877-7229
Web Page: www.ups-psi.com



Package Laboratory Report

Customer: Keter North America, LLC

6435 S. Scatterfield Rd.
Anderson, IN 46013

Test Control Number: 21646774

Date Tested: 6/24/2016

Shipper Number: 772W86

Previous Test Number: N/A

Previous Test Date: N/A

Requested By: 07/49

District: Ohio Valley
Region: East

Product: 212157 - Easy Growing

Package Weight: 29.4 pounds

Factory Package: Yes

Number of Items: 9

Capacity: N/A

Container Style: Full-Overlap Slotted Container (FOL)

Certification: N/A

Corrugation: Vertical BC-flute

Mfg's Joint: Glued

Closure: 3" Wide Pressure Sensitive Poly Tape

Application: Multiple Strips

Dimensions: 45 x 19.75 x 17.25 (LxWxD, inches, OD)

Other: N/A

Packaging Description

Internal Packaging: There are custom corrugated inserts that are placed into the product. There are custom air cells that are built into the flaps of the shipping container that provide cushioning.

Shipping Container: The shipping container is constructed in the Full Overlap Slotted Container (FOL) style, and is fabricated from vertical BC-flute corrugated board of an unknown certification (no box manufacturer's certificate). The shipper has a glued manufacturer's joint.

Basis Weight: 76.3 pounds per 1000 square feet.

Sealing Material and Method: The flaps of the shipping container are sealed with 3" pressure sensitive poly tape in the multiple strip method.

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Testing Information and Results

Test Control Number: 21646774

ISTA Test Procedure 3A - Standard

Performance Test for Individual Packaged-Products - 150 lbs or Less for Parcel Delivery System Shipment

ISTA Test Procedure 3A is a general simulation test for individual packaged-product designed to offer a laboratory simulation of the handling conditions (such as shock, vibration and compression) that exist within the single package distribution environment.

Standard Package-Products shall be defined where: The L x W x H is greater than 12 x 12 x 3 and the weight is 150 lbs or less, but not 10 lbs or less.

ISTA 3A requires one packaged-product for testing, which consist of the following:

Atmospheric Preconditioning: Preconditions the test specimen to the ambient laboratory conditions prior to testing.

Shock: Designed to simulate the impacts a package may experience during loading, unloading and sorting.

Random Vibration With and Without Top Load: Designed to simulate the dynamic vibration forces a package may experience while loaded in a pick-up/delivery vehicle and in a trailer traveling over the road.

Acceptance Criteria:

No visible damage
Product intact
Packaging components able to provide further protection

Details of each sequence are as follows:

Sequence 1 - Atmospheric Preconditioning:

Packages conditioned to lab conditions for 24-hours before testing.
Lab conditions at time of testing were 72 degrees F and 63% RH.

Sequence 2 - Atmospheric Conditioning:

N/A

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Sequence 3 - Shock:

Drop Order	Drop Height	Drop Orientation
1	18 in	Edge 3-4
2	18 in	Edge 3-6
3	18 in	Edge 4-6
4	18 in	Corner 3-4-6
5	18 in	Corner 2-3-5
6	18 in	Edge 2-3
7	18 in	Edge 1-2
8	36 in	Face 3
9	18 in	Face 3

Sequence 4 - Vibration under Dynamic Load

- (A) Test specimen is vibrated under a compressive load following the ISTA 3A Over-the-Road Trailer Spectrum (acceleration versus frequency profile) with an overall Grms of 0.53. If the calculated top load is less than 25 lbs. then no top load is used. If the load is between 25 lbs. and 300 lbs., then the load is rounded to the next closest increment of 5 lbs. If the load is greater than 300 lbs., then the load shall be 300 lbs.

Top Load (TL-H) with Face 3 Down = $(108 - H) \times L \times W \times 0.0035 = 285$ lbs For 60 Minutes

Top Load (TL-L) with Face 4 Down = $(108 - W) \times H \times L \times 0.0035 = 240$ lbs For 30 Minutes

Top Load (TL-W) with Face 6 Down = $(108 - L) \times H \times W \times 0.0035 = 80$ lbs For 30 Minutes

Where:

- TL = total load in pounds
- H = height of individual package
- L = length of individual package
- W = width of individual package
- 108 in. = Height of typical trailer
- 0.0035 lbs/cubic in. = Loading Factor - 50% of the average density

- (B) Test specimen is vibrated without compressive load following the ISTA 3A Pick-Up and Delivery Vehicle Spectrum (acceleration versus frequency profile) with an overall Grms. of 0.46.
Oriented on Face 3 for 30 minutes

Sequence 5 - Shock:

Drop Order	Drop Height	Drop Orientation
10	18 in	Edge 3-4
11	18 in	Edge 3-6
12	18 in	Edge 1-5
13	18 in	Corner 3-4-6
14	18 in	Corner 1-2-6
15	18 in	Corner 1-4-5
16	36 in	Face 6
17	18 in	Face 3 (this drop onto hazard)

This concludes the required testing sequences for the ISTA Procedure 3A.

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RESULTS:

The packaged product has met the requirements of the ISTA 3A based on the acceptance criteria as outlined in this report.

OBSERVATIONS:

1. The outside of the shipping container exhibited normal fatigue associated with shipping in the small parcel environment but remained structurally sound throughout testing.
2. Post-test inspection revealed no product damage. The corrugated air cells on the bottom of the shipping container sustained significant fatigue.
3. A Basis Weight calculation was conducted to determine the combined weight of facings of the corrugated board. This is the ideal way to determine the strength of the corrugated. This is done by separating the liners from the flutes and weighing the liners. The amount is stated as pounds per 1000 square feet (lbs/1000 sq. ft). The liners of the board equaled 76.3 lbs/1000 sq. ft. This is considered a low basis weight for double wall board.

CONCLUSION:

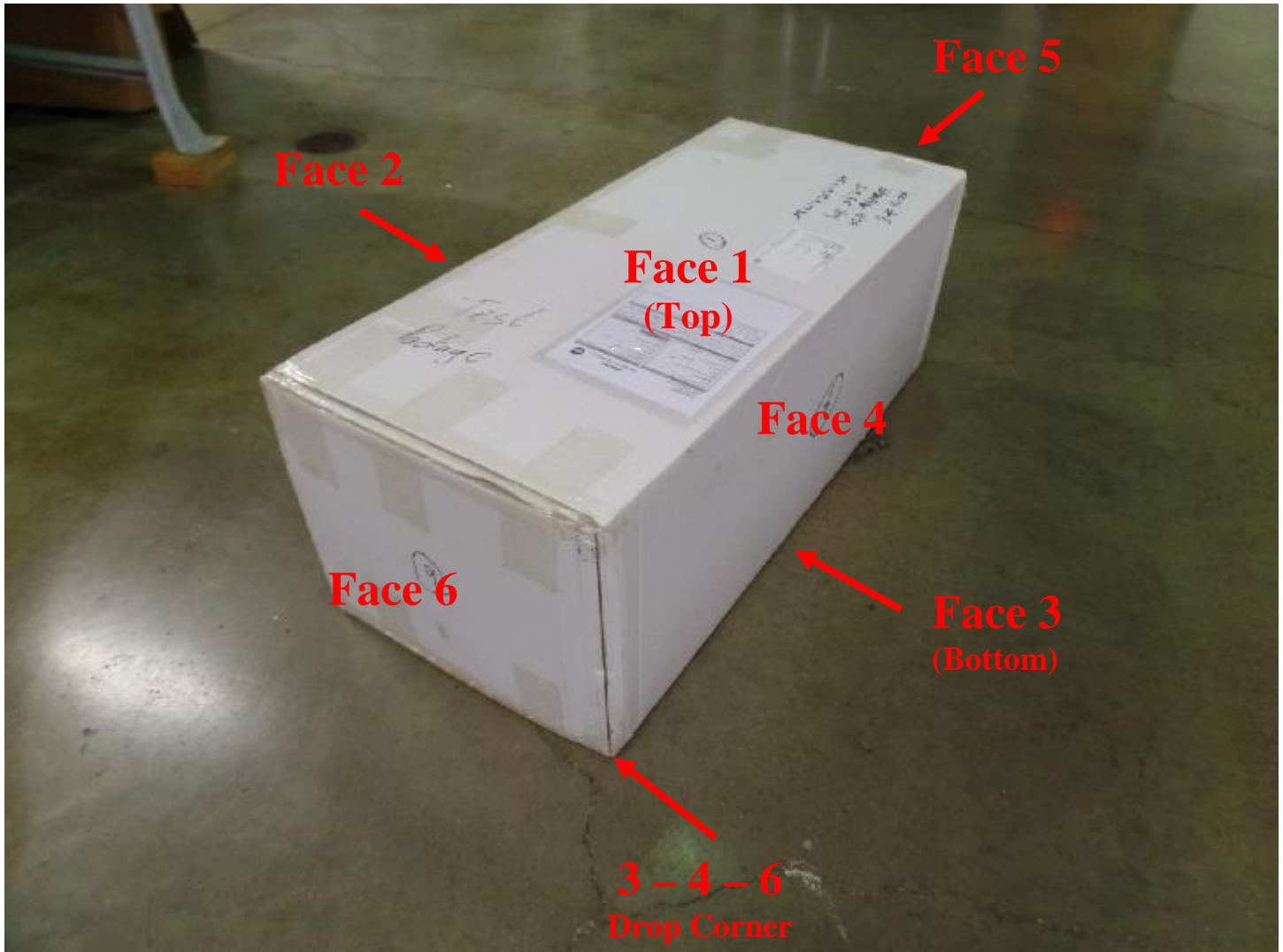
Thank you for providing the UPS Professional Services Package Lab the opportunity to meet your package testing needs. If you have any questions I can be reached at dlee2@ups.com or (630)-628-3749.

Duke Lee
UPS Packaging Engineer

Packaging Engineer Signature: _____

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212157 – Easy Growing

Impact Orientations
June 28, 2016



The faces of the package are identified and labeled according to the ISTA procedure below:

- Test package is placed in its most stable orientation (largest face down) with the smallest panel facing towards you.
- The top (largest face) is labeled as #1.
- Going clockwise around the package, the right side face is labeled as 4, the bottom largest face is labeled as 3 and the left side face is labeled as #2.
- The smallest panel facing you is labeled as #6 and the opposite smallest panel is labeled as #5.

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Compression Fatigue – Edge 4-6



Compression Fatigue – Edge 4-5



Compression Fatigue – Corner 1-2-6



Compression Fatigue – Corner 3-4-6



Compression Fatigue – Edge 3-6



Opening Shipping Container

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Bottom of Shipping Container



Air Cell Impact Fatigue



Air Cell Impact Fatigue



Air Cell Impact Fatigue



Air Cell Impact Fatigue



Corrugated Inserts

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Product Inspection – Base



Product Inspection – Legs



Product Inspection – Bottom