Introduction

As Ecommerce growth rates increase at a rate over 10 times that of brick-and-mortar retail, knowing how a package should be tested properly will help evaluate the performance of a packaged product through an Ecommerce distribution network. Wayfair uses a combination of ISTA testing protocols as well as Wayfair's own testing protocols.

Passing these testing protocols should help reduce damage to the products, thus enhancing the overall customer experience through damage free products. Wayfair is continuously striving to deliver any product we offer without issue, providing the best customer experience in Ecommerce retail. A damage-free experience builds both Wayfair's brand and strengthens our suppliers' brand.

1.0 Purpose

The purpose of this document is to provide guidance and instruction to Wayfair suppliers to enhance the customer experience through damage-free products. Thus, minimizing the occurrence of damage during the distribution cycle is the focus of this document. Wayfair's quest for operational excellence includes collaborating from beginning to end with our suppliers. Wayfair is always working to deliver any product we offer without issue, providing the top customer experience.

Product damage also creates costly and time-consuming additional work. Processing replacement units, replacement parts, filing claims, and following up on credits can have a significant financial impact. In addition, receiving a damaged product leaves the customer with a negative impression of the brand, especially if they feel that the packaging was inadequate.

The testing protocols listed below are only recommendations but could become requirements if the supplier's damage rates at the SKU or class level exceed the average class level damage rates. Work with the Partner Operations team or your Category Management team for the class level damage threshold.

An item that passes these protocols should have no physical damage and should function as intended. Any item that has physical damage or is not functioning properly is considered a failure. Any item(s) that do fail testing, should have the packaging reevaluated and updated. The updated packaging should then be retested until it passes the protocols below.

NOTE: If an item has previously passed testing yet undergoes any packaging or product changes (material, component, dimensional, etc..) an additional passing test is required within 45 days of implementation.

2.0 Small Parcel: Type 1 Package

Type 1 products only ship small parcel and weigh under 25lbs [11.3Kg]. The packaging's longest dimension shall be under 26.00" [660.4mm] and the shortest dimension shall be under 14.00" [355.6mm].

For Testing Requirements, Wayfair recommends using either the ISTA 3A or 6A testing protocols. These protocols were designed to simulate the Ecommerce distribution cycle for small and light items. Wayfair has noted dramatic decreases in damage rates for items that have passed ISTA 3A or 6A.

3.0 Small Parcel: Type 2 & 3 Package

Type 2 & 3 products ship small parcel and weigh 25-150lbs [11.3-68.1Kg]. The packaging's longest dimension shall be under 108.00" [2743.2mm]. The overall girth of the box (2*width) + (2*height) shall be less than 165" [4191mm].

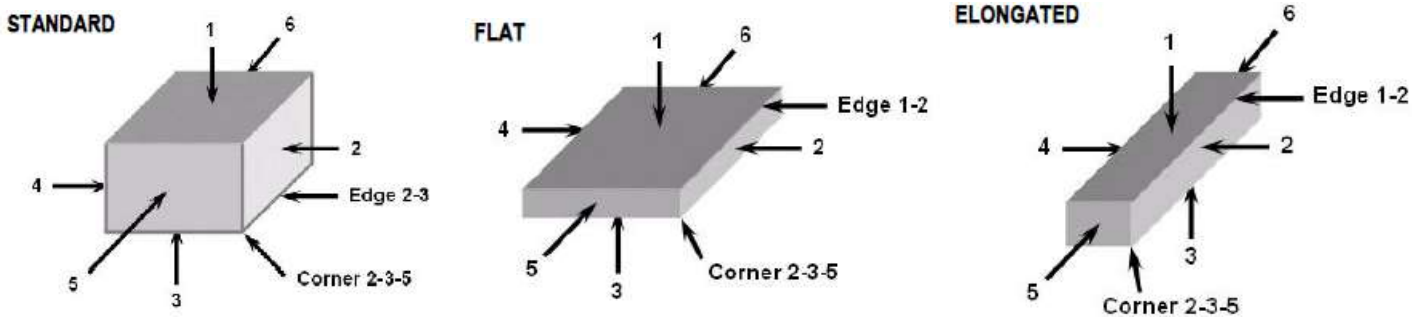
Wayfair has designed a testing protocol that best simulate the Ecommerce distribution cycle for these large and bulky items. This custom protocol incorporates ISTA testing protocols and NMFC Specs (Rule 181), as well as previously established Wayfair drop-testing protocols. Items that pass this 3-pronged testing protocol should arrive at the customer in better condition than if they had passed only one testing protocol.

Step 1: Preconditioning. The product in its packaging shall be preconditioned to laboratory ambient temperature and humidity for no less then 12 hours prior to testing, per ISTA 3A standards.

Step 2: Temperature Testing. Temperature testing is not required unless specified by a Wayfair Packaging Engineering. The temperature protocols will be the ISTA 3A conditions specified by the Wayfair Packaging engineer.

Step 3: Drop testing #1. Follow the following drop sequence in the table below. Note there are two different drop heights, which depend on the weight of the product.

Box Faces



Drop Number	<75 lbs. [34.1 kg]	76-150 lbs. [34.4-68.1 kg]	Face, Edge, or Corner
1	24.00" [609mm]	16.00" [406.4mm]	Edge 3-4
2	24.00" [609mm]	16.00" [406.4mm]	Edge 3-6
3	24.00" [609mm]	16.00" [406.4mm]	Edge 4-6
4	24.00" [609mm]	16.00" [406.4mm]	Edge 3-5
5	24.00" [609mm]	16.00" [406.4mm]	Corner 3-4-6
6	24.00" [609mm]	16.00" [406.4mm]	Corner 2-3-5
7	24.00" [609mm]	16.00" [406.4mm]	Corner 1-5-4
8	24.00" [609mm]	16.00" [406.4mm]	Corner 1-2-6

9	24.00” [609mm]	16.00” [406.4mm]	Edge 2-3
10	24.00” [609mm]	16.00” [406.4mm]	Edge 1-2
11	**36.00” [910mm]**	**24.00” [300mm]**	Face 3
12	24.00” [609mm]	16.00” [406.4mm]	Face 3

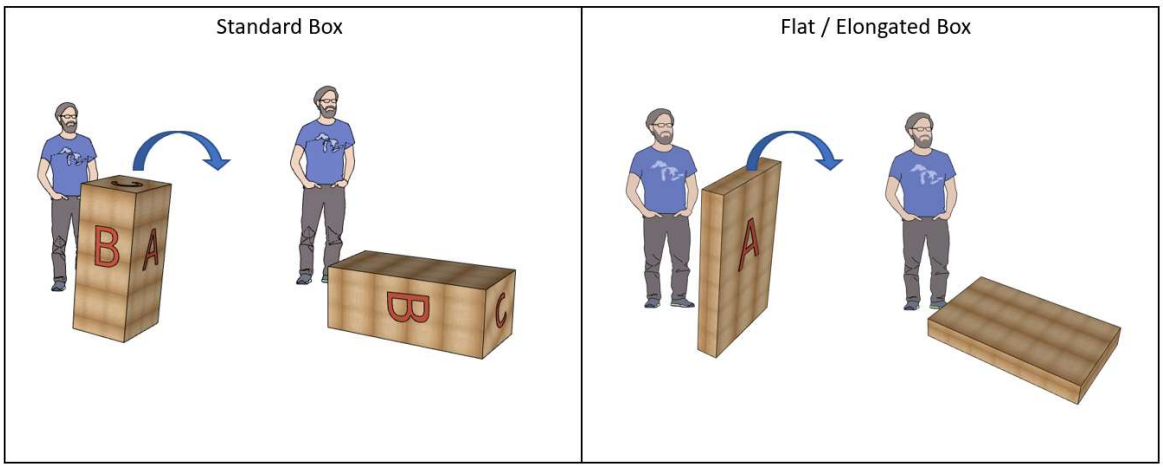
Step 4: Vibration Testing. Follow the ISTA 3A Pickup and Delivery Vehicle Simulation- Test block 7. This simulation should also include the “top-loaded apparatus”, per the ISTA transit spec.

Step 5: Drop testing #2. Follow the following drop sequence in the table below. Note there are two different drop heights, which depend on the weight of the product.

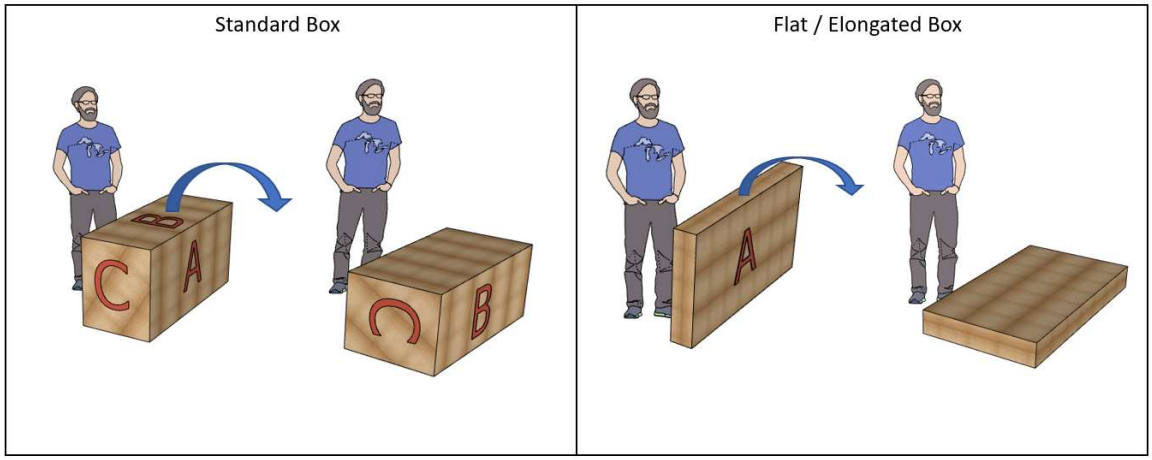
Drop Number	<75 lbs. [34.1Kg]	76-150 lbs. [34.4-68.1 KG]	Face, Edge, or Corner
13	24.00” [609mm]	16.00” [406.4mm]	Edge 1-5
14	24.00” [609mm]	16.00” [406.4mm]	Edge 1-6
15	24.00” [609mm]	16.00” [406.4mm]	Edge 1-4
16	24.00” [609mm]	16.00” [406.4mm]	Corner 3-4-6
17	24.00” [609mm]	16.00” [406.4mm]	Corner 1-2-6
18	24.00” [609mm]	16.00” [406.4mm]	Corner 1-4-5
19	24.00” [609mm]	16.00” [406.4mm]	Face 1
20	**36.00” [910mm]**	**24.00” [300mm]**	Most critical face
21	24.00” [609mm]	16.00” [406.4mm]	Face 3 on Hazard
22	24.00” [609mm]	16.00” [406.4mm]	Face 1 on Hazard

Step 6: Vibration Testing. Follow the ISTA 3A – Dynamic Load and Random- Test block 4. This simulation should also include the “top-loaded apparatus”, per the ISTA transit spec.

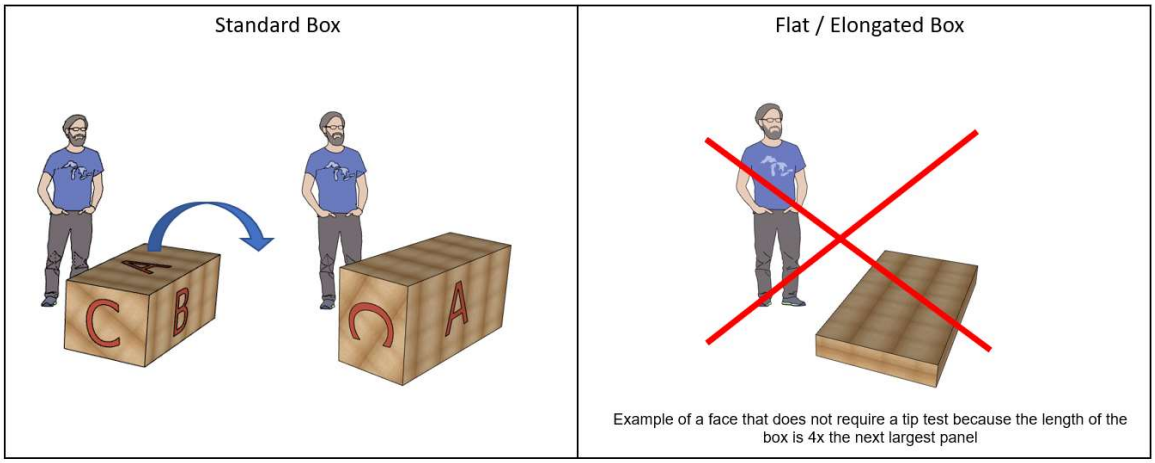
Step 7: Tip Over Testing. Perform a “tip over” test on the one of the lengths, one of the widths, and one of the depth panels of the shipping carton. To do this, stand up the shipping carton and sightly push on it to allow it to fall onto the face. If the length is 4x the next largest panel dimension and cannot be easily flipped over, then this face of the carton can be excepted from the test. Below are illustrations that helps demonstrate this tip over test.



Place box on smallest panel of the box and tip over



Place box on the next smallest panel of the box and tip over



Place box on the largest panel of the box and tip over

Step 8: Drag Test: For items that have a dimension greater than 48" [1220mm] and weigh more than 50lbs [22.7KG]. Perform a drag test on the most critical or damage-prone edge of the shipping container. Shipping cartons should be placed on their damage prone edge, at an angle of 30-50 degrees, and dragged 75 feet [23 meters] on concrete or asphalt. See illustration below.



Step 9: Bridge/Concentrated Impact Testing. Follow the ISTA 3A testing protocol for either the Bridge Impact or Concentrated Impact Testing. Testing is based on either an elongated or flat style box specified by ISTA.

4.0 Large Parcel: Type 4 Palletized Load

For products that are unitized, or a single large unit placed on pallet or skid, Wayfair recommends using the ISTA 3E testing protocols. This protocol was designed to simulate pallets or skids going through a distribution cycle. This protocol shall only be used for products with a pallet. Any other large parcel being shipped without a pallet shall use the Type 5 testing protocol.

5.0 Large Parcel: Type 5 Floor Loaded

Wayfair has designed its own testing protocol that best simulates the Ecommerce distribution cycle for these large and bulky items that are shipped by LTL (Less-Than-Truckload) and box truck. These items are not shipped on a pallet and are shipped by themselves. These items are typically moved into trucks by hand, dollies, hand-trucks, clamper trucks, etc. This custom protocol incorporates ISTA testing protocols and previously established Wayfair testing protocols. Items that pass this 2-pronged testing protocol should arrive at the customer in better condition than if they had passed only one testing protocol.

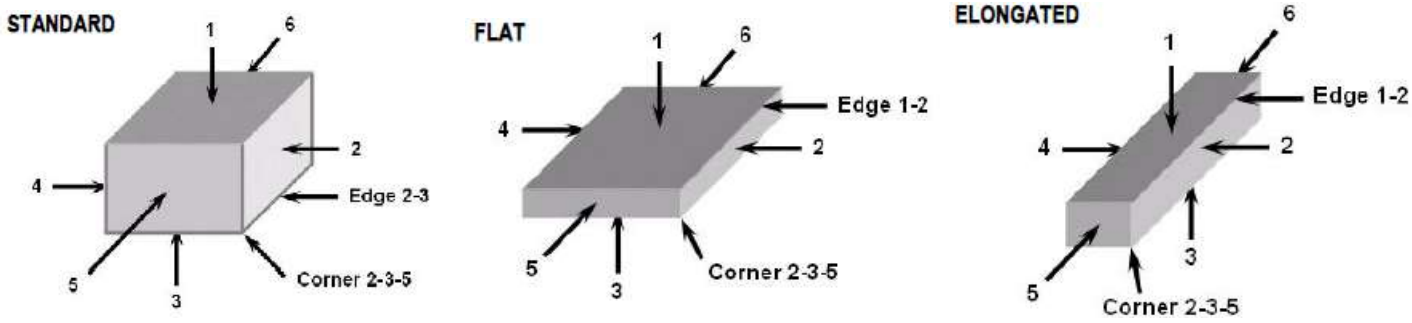
Step 1: Preconditioning. The product in its packaging shall be preconditioned to laboratory ambient temperature and humidity for no less then 12 hours prior to testing Per ISTA 3B standards.

Step 2: Temperature Testing. Temperature testing is not required unless specified by a Wayfair Packaging Engineering. The temperature protocols will be the ISTA 3B conditions specified by the Wayfair Packaging engineer.

Step 3: Rotational Drop Testing. Follow the Rotational Drop requirements, per ISTA 3B standards.

Step 4: Drop testing #1. Follow the following drop sequence in the table below. Note there are two different drop heights, which depend on the weight of the product.

Box Faces



Drop Number	<50 lbs. [22.7 kg]	51-125 lbs. [23.1-56.7 kg]	125+ lbs. [56.7+ kg]	Face, Edge, or Corner
1	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Face 1
2	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Corner 2-3-5
3	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Edge 3-6
4	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Edge 3-5
5	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Corner 4-3-6
6	**36.00” [910mm]**	**28.00” [711.2mm]**	**20.00” [510mm]**	Face 3

Step 5: Vibration Testing. Follow the ISTA 3B random vibration testing with top load.

Step 6: Drop testing #2. Follow the following drop sequence in the table below. Note there are two different drop heights, which depend on the weight of the product.

Drop Number	<50 lbs. [22.7 kg]	51-125 lbs. [23.1-56.7 kg]	125+ lbs. [56.7+ kg]	Face, Edge, or Corner
1	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Edge 2-3
2	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Corner 3-4-6
3	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Edge 4-5
4	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Corner 1-4-6
5	24.00” [609mm]	18.00” [457.2mm]	10.00” [200mm]	Edge 3-5
6	**36.00” [910mm]**	**28.00” [711.2mm]**	**20.00” [510mm]**	Face 3

Step 7: Bridge/ Concentrated Impact Testing. Follow the ISTA 3B testing protocol for either the Bridge Impact or Concentrated Impact Testing. Testing is based on either an elongated or flat style box specified by ISTA.

Step 8: Clamping Simulations. Follow the Clamping Simulations requirements, per ISTA 6A standards.

Testing Reports

After testing has been completed and the product (with its packaging) has passed testing, provide a copy of the test report to your Category Manager or Partner Operation Manager.

Testing report should include pictures of before and after testing, as well as packaging material information. Below are photos that minimally be included into the test report.

- Pictures of location of any handling symbols on the shipping container
- Pictures of all 6 sides of the shipping carton
- ISO picture of the box shipping carton
- Pictures of foam or any void fill material
- Layer by layer photos of the item being unpacked. (Below is an example)



- After testing provide photos of any damage items or components. This should include close up photos of the damage area(s). (Below are some examples of damage photos)






For all technical related question on testing, contact James Eyerman CPLP, CPP at JEyerman@Wayfair.com,