

Comparison of ASTM and ISTA Transit Simulation Methods

ASTM D4169-09	ISTA 2A
Distribution Cycle 3 @ Assurance Level 1 Air and Motor Freight, single package up to 100 lb	Individual Packaged products 150 lb or less.
Test Purpose	
<p>Both of these test procedures are used to subject individually packaged products to compression, vibration and impact hazards similar to those encountered in the normal shipping and distribution environment. These procedures will provide adequate information as to whether or not a protective package design will survive transit. The differences in the test protocols lie in the duration of the test inputs (compression) and the relative intensities (drop heights, number of drops and vibration intensity).</p>	
Test Purpose	
<p>CONDITIONING (optional)</p> <p>Special conditioning and testing atmospheres that may be used to simulate particular field conditions that a container, package, or packaging component may encounter during its life or testing cycle. If no time period is specified, a period of at least 72 hours or that required to reach equilibrium is recommended. Test conditions can be selected from the six parameters listed in ASTM D4332.</p>	<p>CONDITIONING (required)</p> <p>To permit an adequate determination of packaged-product performance at anticipated atmospheric limits and where it is known that the atmospheric extremes are detrimental to the product, ISTA</p> <ul style="list-style-type: none"> ■ Requires the highest temperature and humidity limits shall be used, but ■ Recommends that both the highest and lowest atmospheric conditions be used. A separate 2A test sequence should be conducted following each atmospheric condition selected.
<p>INITIAL MANUAL HANDLING (Schedule A)</p> <p>6 impacts from a drop height that ranges from 10" to 24" depending on the gross weight of the package system.</p> <p>Reference ASTM D5276</p>	<p>COMPRESSION TEST</p> <p>Static compression of the package system to a maximum top load that is calculated from the test protocol: dependent on the height of the package, duration of stack in distribution and weight of the package.</p> <p>Safety factor = 6</p> <p>Reference ASTM D5276</p>
<p>LOOSE LOAD VIBRATION (Schedule F)</p> <p>Repetitive bounce input for 30 minutes base down and 15 minutes each in the side down and end down orientations.</p> <p>Reference ASTM D999 (Method A1 or A2)</p>	<p>INITIAL RANDOM VIBRATION TEST</p> <p>Random vibration test input covering 1-200 Hz @ 1.15 Grms. 30 minutes base down and 10 minutes each in the top down, side down and end down package orientations.</p> <p>Total of 1 hour of vibration input.</p> <p>Reference ASTM D4728</p>

Test Purpose cont...

CONCENTRATED IMPACT (Schedule J)

This schedule provides a simulation of anticipated low level concentrated impacts as received by packages during sorting operations and in transit.

FINAL MANUAL HANDLING (Schedule A)

Five impacts from a drop height that ranges from 10" to 24" depending on the gross weight of the package system. Sixth and final impact from twice the drop height onto the base surface of the package system.

Reference ASTM D5276

This is a brief summary of the test procedures and therefore the protocols must be reviewed for complete details of testing parameters prior to conducting any test procedure.

Note: ASTM D4169 Distribution Cycle 13 includes a Low Pressure (altitude) test.

