IOPP Transport Packaging Committee

Transportation, Handling, and Testing Standards Update
08/18/14
Bryan Williams
Adeola Akinola
ISTA Standards Update

- Addition of ISTA Series 1 Mandatory Pre-Conditioning Approved
  - Preconditioning Identical to Series 3 Pre-Conditioning

- ISTA Series 3 Edits:
  - Compression Note in “Before You Begin” section of ISTA 3E and 3H tests removed, Several commenters stated that Note caused confusion
  - Reference to Air Spectrum in ISTA 3A (Step 5 in Optional Vibration) removed.

- Standard 20 Revision 2 is up for Final Review and Approval:
  - Total length decreased to ~25 pages from 45 pages
  - A more stringently defined method to amount and placement of thermocouples within the shipper
  - Data Package Examples is now contained within a 17 page book (formerly was 1000 pages)
  - Procedure is now aligned with FDA Process Validation Guidance
Unit Load Stability Testing

- The task group formed in 2013 to evaluate unit load testing in Series 3 tests has created new test standards to evaluate unit load stability
  - **Modified Inclined Impact Testing** using short duration, low level shocks.
  - Using a modified incline plane, the tester simulates horizontal impact while also keeping the pallet away from the impact surface during testing
Unit Load Stability Testing

- 2\textsuperscript{nd} Method of Unit Load testing being evaluated: \textbf{Tilt Testing}
    - Can it provide feedback on how well a unit load will stay contained when experiencing the gravitational forces created by truck acceleration, braking, and turning?
    - This does not replicate the dynamic elements of transportation and handling.
ASTM Standards Update

ASTM D4169

- 2014 Revision coming soon…
- Schedule G update
  - AAR reference, 3 → 4 impacts
- Schedule A (Handling) still under review
- Schedule B & C (Stacking) in ballot process
  - Small parcel average shipping density factor (10 → 12)
  - Considering addition of optional test element
- Schedule D & E (Vibration) in review process
  - Proposed revision to truck profiles
    - New shape, multiple test levels (low, medium, high)
  - Air and Rail profiles to be discussed at next D10 meeting
ASTM Standards Update

ASTM D4169 - Random Vibration Task Group

- Started with Truck Profile (most common)
- Random Vibration Profiles are based on data from General Technical Report FPL 22 (Forest Products Laboratory)
- Current shape of ASTM truck profile is different when compared to other industry standards and recently collected field data
- Task group has committed to updating the vibration profiles:
  - “White Paper” of concept created by task group – February 2014
  - Concept document with proposed changes balloted and approved by D10.21 subcommittee – March 2014
  - Need industry assistance to run additional comparison tests - 2014
- Finalize truck profile changes and ballot at ASTM D10 main committee – Spring 2015
**ASTM Standards Update**

**ASTM D4169 - Random Vibration Task Group**

<table>
<thead>
<tr>
<th>Loop</th>
<th>Test Sequence</th>
<th>Proposed Grms</th>
<th>Proposed Test Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (Low)</td>
<td>0.402</td>
<td>40 minutes</td>
<td></td>
</tr>
<tr>
<td>B (Medium)</td>
<td>0.542</td>
<td>15 minutes</td>
<td></td>
</tr>
<tr>
<td>C (High)</td>
<td>0.701</td>
<td>5 minutes</td>
<td></td>
</tr>
</tbody>
</table>

Total Loop Time: 60 minutes

Loop repeated three times
Standard Spotlight

- **ASTM D6537**: Standard Practice for Instrumented Packaging Shock Testing For Determination of Package Performance
  - Standard was Reapproved in 2014
  - Covers technical concepts associated with instrumented testing such as Peak to Peak Acceleration, Pulse Duration, Fairing, and Accelerometer specification
  - Contains information on how to begin, conduct and evaluate results for proper instrumented testing of a packaged product including placement and mounting of recording devices (accelerometers)
ISO Transport Packaging

- **ISO ICS:** The International Classification for Standards
  - A way to collect various ISO procedures into a catalogue type guide so that various ISO specification can be presented as a collection of standards pertaining to a particular area of interest
  - **ICS 55:** Packaging And Distribution of Goods; Most standards within this category deal with types of packages, containers and their various uses.
  - **ICS 55.180:** Freight Distribution of Goods: This category within ICS 55 collects ISO standards on conditioning and testing for various containers and pallet configurations

- Although ISTA and ASTM standards cover most of the material presented within these ISO standards it is good to know that these standards do exist as resources for testing.