



## ISTA PROCEDURES

### ISTA Tests

Performance Tests result in a Pass/Fail assessment and are used to determine the viability of a packaged-product to survive normal shipment. Development Tests compare relative performance of two or more designs or the same design from different suppliers.

### ISTA® Test Series

Test protocols are also grouped into what ISTA calls a Series. Testing moves from non-simulation of transport environmental hazards through simulation in general or broad terms and finally to a test developed from a comprehensive collection of field data.

### Procedures Versus Projects

Most ISTA tests are called Procedures because they have been validated to be effective and the testing methodology seldom changes. New tests, called Projects, are in their first years of implementation, are closely monitored and subject to change.

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#### **ISTA 1 Series: Non-Simulation Integrity Performance Tests.**

Challenge the strength and robustness of the product and package combination. Not designed to simulate environmental occurrences. Useful as screening tests, particularly when used as a consistent benchmark over time.

##### **Procedure 1A: Packaged-Products weighing 150 lb (68 kg) or Less**

Basic Requirements: fixed displacement vibration and shock testing.

##### **Procedure 1B: Packaged-Products weighing Over 150 lb (68 kg)**

Basic Requirements: fixed displacement vibration and shock testing.

##### **Procedure 1C: Extended Testing for Individual Packaged-Products weighing 150 lb (68 kg) or Less**

Basic Requirements: fixed displacement or random vibration, shock testing and compression.

##### **Procedure 1D: Extended Testing for Individual Packaged-Products weighing Over 150 lb (68 kg)**

Basic Requirements: fixed displacement or random vibration, shock testing and compression.



**Procedure 1E: Unitized Loads**

Basic Requirements: vertical linear or random vibration and shock testing.

**Procedure 1G: Packaged-Products weighing 150 lb (68 kg) or Less (Random Vibration)**

Basic Requirements: random vibration and shock testing.

**Procedure 1H: Packaged-Products weighing Over 150 lb (68 kg) (Random Vibration)**

Basic Requirements: random vibration and shock testing.

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**ISTA 2 Series: Partial Simulation Performance Tests.**

Tests with at least one element of a 3 Series type General Simulation performance test, such as atmospheric conditioning or mode-shaped random vibration, in addition to basic elements of a 1 Series type Non-Simulation Integrity test.

**Procedure 2A: Packaged-Products weighing 150 lb (68 kg) or Less**

Basic Requirements: atmospheric conditioning, compression, fixed displacement or random vibration and shock testing.

**Procedure 2B: Packaged-Products weighing over 150 lb (68 kg)**

Basic Requirements: atmospheric conditioning, compression, fixed displacement or random vibration and shock testing.

**Procedure 2C: Furniture Packages** Basic Requirements: atmospheric conditioning, compression and shock testing.

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**ISTA 3 Series: General Simulation Performance Tests.**

Designed to provide a laboratory simulation of the damage-producing motions, forces, conditions, and sequences of transport environments. Applicable across broad sets of circumstances, such as a variety of vehicle types and routes, or a varying number of handling exposures. Characteristics will include simple shaped random vibration, different drop heights applied to the sample package, and/or atmospheric conditioning such as tropical wet or winter/frozen.

**Procedure 3A: Packaged-Products for Parcel Delivery System Shipments 70kg (150 lb) or Less (standard, small, flat or elongated)**

Test Procedure 3A is a general simulation test for individual packaged-products shipped through a parcel delivery system. The test is appropriate for four different package types commonly distributed as individual

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packages, either by air or ground. The types include standard, small, flat and elongated packages. Basic Requirements: atmospheric pre-conditioning, random vibration with and without top load, and shock testing.

**Procedure 3B: Packaged-Products for Less-Than-Truckload (LTL) Shipment**

Procedure 3B is a general simulation test for packaged-products shipped through a motor carrier (truck) delivery system, where different types of packaged-products, often from different shippers and intended for different ultimate destinations, are mixed in the same load. This type of shipment is called LTL (Less-Than-Truckload).

Project 3B is appropriate for four different types of packages commonly distributed in LTL shipments: Standard 200 lb (91 kg) or less, Standard over 200 lb (kg), Cylindrical, and Palletized or Skidded. Requirements may include atmospheric conditioning, tip-tip over, shock and impact, random vibration with top load, concentrated impacts, and fork lift handling.

**Procedure 3E: Unitized Loads of Same Product**

Basic Requirements: atmospheric conditioning, compression, random vibration and shock testing.

**Procedure 3H: Performance Test for Products or Packaged-Products in Mechanically Handled Bulk Transport Containers**

Basic Requirements: atmospheric conditioning, random vibration and shock testing.

**Project 3K: Fast Moving Consumer Goods for the European Retail Supply Chain**

Project 3K is a general simulation test for fast moving packaged consumer products shipped through the multiple-retail supply chain environment in Europe. Project 3K is appropriate for the range of packages commonly merchandised through large retailer stores and large retail chain convenience stores, and where retailer operations include shipment of store-specific mixed loads in roll cages or as mixed pallets. Many European grocery packages are in shelf-ready format; this method applies equally to shelf ready and non-shelf ready packages. Basic requirements: atmospheric conditioning, picking (handling), shock, random vibration

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**ISTA 4 Series: Enhanced Simulation Performance Tests.**

General Simulation test with at least one element of focused simulation, such as test sequence or condition linked to actual known distribution. Project 4AB, an Enhanced Simulation Performance Test, has been released as version 1.0.0 and is currently under further development by ISTA. It closely ties the tests and sequence to a user-defined pattern of distribution, and includes a broad range of current and quantitative information on distribution environment hazards. The Focused Simulation elements are test-tailoring to individual situations, and usage of up-to-date and specific hazard profiles and parameters. Project 4AB is a web-based application to generate customized test plans; most of the complexity will be handled "behind the scenes" without burdening the user.



**ISTA Members - login to the ISTA Member Center to access 4AB.**

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**ISTA 6 Series: Member Performance Tests.**

Test protocols created by ISTA members to meet their particular purposes and applications. The tests may be completely original, or may be modifications or variations of ISTA Procedures or Projects or other published and accepted tests. ISTA reviews and approves these tests, but primary responsibility rests with the originating members.

**6-FEDEX-A: FedEx Procedures for Testing Packaged Products Weighing Up to 150 lbs.**

**6-FEDEX-B: FedEx Procedures for Testing Packaged Products Weighing Over 150 lbs.**

**Project 6-SAMSCLUB, Packaged-Products for Sam's Club® Distribution System Shipment**

ISTA® 6-SAMSCLUB was developed by ISTA in cooperation with Sam's Club, and is designed as a General Simulation protocol. 6-SAMSCLUB is a general simulation test for packaged-products shipped through the Sam's Club® distribution system to final destinations in the U.S. It was developed from an extensive survey, observation, and field measurement program of the actual Sam's Club system. The program involved personal visits to various Distribution Centers, overseas suppliers and ports, and U.S. Club stores. Ocean containers, trucks, and fork lifts were instrumented for acceleration and other data. Industry experts translated this information, observation, and data into the 6-SAMSCLUB Project laboratory tests.

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**ISTA 7 Series: Development Tests.**

These tests are used in the development of transport packages. They can be used to compare relative performance of two or more container designs, but are not intended to evaluate the protection afforded packaged-products.

**Procedure 7D: Thermal Controlled Transport Packaging for Parcel Delivery System Shipment**

Basic Requirements: atmospheric conditioning, vibration and shock testing.

*ISTA Procedure 7D, which was set for discontinuation in 2012, has been extended. You will find Procedure 7D, with editorial changes, included in the 2012 ISTA Resource Book. ISTA Members can download 7D through their Member Center account; non-members can order it through the ISTA E-Market.*