ISTA 1 Series Non-Simulation Integrity Performance Test Procedure

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Last TECHNICAL Change: MARCH 2014

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For complete listing of Procedure Changes and Version Dates go to **www.ista.org**

Preface

ISTA, Distributing Confidence, Worldwide™

ISTA 1 Series are the most basic category of performance tests.
- They challenge the capability of the package and product to withstand transport hazards, **but**
- They are not simulations of actual transport hazards, **and**
- Do not necessarily comply with carrier packaging regulations.

When properly applied, ISTA procedures will provide tangible benefits of:
- Shortened packaged development time and confidence in product launch
- Protection of products and profits with reduced damage and product loss
- Economically balanced distribution costs
- Customer satisfaction and continued business.

There are three sections: Overview, Testing and Report
- **Overview** provides the general knowledge required before going into the testing laboratory **and**
- **Testing** presents the specific instructions to do the testing in the laboratory **and**
- **Report** indicates what data shall be recorded to submit a test report to ISTA.

Two systems of weights and measures are presented in ISTA test procedures. They are the English system (Inch-Pound) and the international system SI (Metric). Inch-Pound units are shown first with Metric units in brackets, except in some tables where they are shown separately.
- Either system may be used as the unit of measure (standard units), **but**
- The standard units chosen shall be used consistently throughout the procedure.
- Units are converted to two significant figures **and**
- Not exact equivalents.

VERY IMPORTANT:
The entire document shall be read and understood before proceeding with a test.

OVERVIEW OF PROCEDURE 1G

Test Procedure 1G is an integrity test for individual packaged-products.
- It can be used to evaluate the performance of a packaged-product.
- It can be used to compare relative performance of package and product design alternatives.
- The package and product are considered together and not separately.
- Some conditions of transit, such as moisture, pressure or unusual handling, may not be covered.

Other ISTA Procedures may be appropriate for different conditions or to meet different objectives.

Specific suggestions:
- To use fixed displacement vibration instead of random vibration, use ISTA Test Procedure 1A and not 1G.
- For packaged-products where a minimum compression value should be tested, use ISTA Test Procedure 1C.
- For packaged-products intended for international distribution consider ISTA Partial-Simulation Performance Test Procedure 2A.
- For packaged-products that may be transported in a small parcel delivery system consider ISTA General Simulation Performance Test Procedure 3A.

Refer to *Guidelines for Selecting and Using ISTA Procedures and Projects* for additional information.

OVERVIEW OF PROCEDURE 1G

Scope

Test Procedure 1G covers testing of individual packaged-products weighing 150 lb (68 kg) or less when prepared for shipment.

EXCEPTION:
Individual packaged-products on a visible skid or pallet and that weigh more than 100 lb (45 kg) may be tested according to Test Procedure 1E or 1H.

Product Damage Tolerance and Package Degradation Allowance

The shipper shall determine the following prior to testing:
- what constitutes damage to the product and
- what damage tolerance level is allowable, if any, and
- the correct methodology to determine product condition at the conclusion of the test and
- the acceptable package condition at the conclusion of the test.

For additional information on this determination process refer to *Guidelines for Selecting and Using ISTA Procedures and Projects.*

Samples

Samples should be the untested actual package and product, but if one or both are not available, the substitutes shall be as identical as possible to actual items.

Number of samples required:
- One sample is required for the tests in this procedure.

Replicate Testing Recommended:
To permit an adequate determination of representative performance of the packaged-product, ISTA:
- Requires the procedure to be performed one time, but
- Recommends performing the procedure five or more times using new samples with each test.

NOTE:
Packages that have already been subjected to the rigors of transportation cannot be assumed to represent standard conditions. In order to insure testing in perfect condition, products and packages shipped to certified laboratories for testing must be:
- over-packaged for shipment to the laboratory or
- repackaged in new packaging at the laboratory.

Test Sequence

The tests shall be performed on each test sample in the sequence indicated in the following table:

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Sequence #	Test Category	Test Type	Test Level	For ISTA Certification
1	Atmospheric Preconditioning	Temperature and Humidity	Ambient	Required
2	Vibration	Random	Overall G_{rms} level of 1.15	Required
3	Shock (Alternative methods allowed – select one test type)	Drop	Height varies with packaged-product weight	Required
		Incline Impact (Conbur)	Impact Velocity varies with packaged-product weight	
		Horizontal Impact	Impact Velocity varies with packaged-product weight	