

ISTA 7 Series
Development
Test
Procedure

ISTA, Distributing Confidence, Worldwide™

ISTA 7 Series tests are package development tests.

- Test elements may come from ISTA Series 1, 2 or 3 tests, **and**
- They may or may not evaluate the protection afforded packaged-products.

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.

VERSION
DATE

Last

TECHNICAL
Change:
JANUARY
2008

Two systems of weights and measures are presented in ISTA test procedures. They are the English system (Inch-Pound) and the international system (Metric). Inch-Pound units are shown first with Metric units in brackets, except in some tables where they are shown separately. In the case of temperatures, °C is shown first and °F is in brackets.

- 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.

Last
EDITORIAL
Change:
JANUARY
2010

VERY IMPORTANT:

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

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

Preface

OVERVIEW FOR PROCEDURE 7B

Test Procedure 7B is a development test for reusable transport packages.

- It can be used for the development of closed reusable transport package systems made of any material.
- It can be used to compare relative performance of two or more container designs.
- It is not intended to evaluate the protection afforded packaged-products.
- Only the container is considered.

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

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

Scope

Test Procedure 7B covers testing of closed reusable transport containers capable of holding a load of up to 150 lb (68 kg) or less when prepared for shipment. This test procedure confines its testing activities to the reusable container only and no product is tested.

NOTE:

Other ISTA Test Procedures will cover open reusable transport containers, intermediate bulk containers (IBCs) and pallet boxes.

Product Damage
Tolerance and
Package
Degradation
Allowance

Damage shall be determined to have taken place if, at any time during the testing, the ability to reuse the container in a safe and damage free condition is threatened because of:

- cracks beginning to appear anywhere on the container **and/or**
- failure of any hinge or latch on the container.

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

Samples

Samples shall be the untested actual containers.

Number of samples required:

Twenty samples are required for the tests in this procedure.

A minimum sample size of three shall be tested for the following tests:

- lid yield strength
- container yield strength
- double stacked container yield

A sample size of one shall be tested for all other tests.

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 three 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

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

Sequence #	Test Category	Test Type	Test Level	For ISTA Certification
1	Atmospheric Preconditioning	Ambient Temperature and Humidity	Ambient temperature and humidity 6 hrs. prior to test	Required
2	Atmospheric Conditioning	Controlled Temperature and Humidity	Temperature and humidity selected from Chart	Optional
3	Vibration	Vertical Linear Fixed Displacement	1 in (25mm) peak to peak at 3.3 Hz. or 200 cpm	Required
4	Vibration	Random	Overall G_{rms} level of 1.15	Required
5	Compression	Machine - Lid Yield Strength	Peak force to failure	Required
6	Compression	Machine - Container Yield Strength	Peak force to failure	Required
7	Compression	Machine – Double Stacked Container Yield Strength	Peak force to failure	Required
8	Compression	Machine – Nesting Stop Yield Strength	Peak force to failure	Required
9	Shock (Alternative methods allowed – select one test type)	Drop	6 ft (1.8 m)	Required
		Shock Machine	236 in/s (6.0 m/s)	
10	Shock (Alternative methods allowed – select one test type)	Drop	30 in (760 mm)	Required
		Shock Machine	152 in/s (3.9 m/s)	

Equipment
Required
Atmospheric
Conditioning

Atmospheric Conditioning:

- Temperature recording apparatus complying with the apparatus section of ASTM D 4332.

Optional Atmospheric Conditioning

- Chamber and Control apparatus complying with the apparatus section of ASTM D 4332.
 - Humidity recording apparatus complying with of the apparatus section of ASTM D 4332.
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Equipment
Required
Vibration

The following alternatives are acceptable for the equipment required for the Vibration Test:

Fixed Displacement Vibration Test:

- Vibration Test System with a 1 in (25 mm) fixed or controlled displacement complying with Method A1 or A2 of the apparatus section of ASTM D 999.
Only vertical linear motion of the platform is acceptable, rotary motion is not acceptable.
- Tachometer or suitable indicator for determining vibration frequency in cycles per second (Hz) or cycles per minute (CPM).
- Automatic timer or stopwatch.

Random Vibration Test:

- Random Vibration Test System complying with the apparatus section of ASTM D 4728.
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Equipment
Required
Shock

The following alternatives are acceptable for the equipment required for the Shock Test:

Equipment required for the Free Fall Drop Test:

- Free Fall Drop Test System complying with of the apparatus section of ASTM D 5276.
 - Shock Test System complying with the apparatus section of ASTM D 5487.
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Equipment
Required
Compression

Apply and Release Compression Test:

- Fixed-Platen Compression Test System complying with the apparatus section of ASTM D 642.