

## Deutsche Akkreditierungsstelle GmbH

### Annex to the Accreditation Certificate D-PL-11272-01-00 according to DIN EN ISO/IEC 17025:2005

**Valid from: 03.06.2019**

Date of issue: 17.07.2019

Holder of certificate:

**VDZ GmbH - Kompetenz- und Prüfzentrum für Verpackung und Transport  
Giselherstraße 34, 44319 Dortmund**

Tests in the fields:

**mechanical and climatic environment simulation tests on loading units, packages, packaging materials (packaging components) and technical products as well as climate, shock, vibration and impact tests and their combinations**

**Within the given examination field the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkKS, the free choice of standard or equivalent testing methods.**

**The listed testing methods are exemplary. The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.**

DIN EN ISO 2233 2001-11	Packaging - Complete, filled transport packages and unit loads - Conditioning for testing
DIN EN ISO 2234 2002-12	Packaging - Complete, filled transport packages and unit loads - Stacking tests using a static load
DIN EN ISO 2244 2002-12	Packaging - Complete, filled transport packages and unit loads - Horizontal impact tests
DIN EN ISO 2247 2002-12	Packaging - Complete, filled transport packages and unit loads - Vibration tests at fixed low frequency

This document is a translation. The definitive version is the original German annex to the accreditation certificate.

Abbreviations used: see last page

*The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.  
<https://www.dakks.de/en/content/accredited-bodies-dakks>*

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DIN EN ISO 8318 2002-12	Packaging - Complete, filled transport packages and unit loads - Sinusoidal vibration tests using a variable frequency
DIN EN ISO 8611-1 2012-10	Pallets for materials handling - Flat pallets - Part 1: Test methods
DIN EN ISO 8611-2 2016-08	Pallets for materials handling - Flat pallets - Part 2: Performance requirements and selection of tests
DIN EN ISO 8611-3 2012-10	Pallets for materials handling - Flat pallets - Part 3: Maximum working loads
DIN EN ISO 2873 2002-12	Packaging - Complete, filled transport packages and unit loads - Low pressure test
DIN EN ISO 4180 2010-12	Packaging - Complete, filled transport packages - General rules for the compilation of performance test schedules
DIN ISO 10531 2000-03	Packaging - Complete, filled transport packages - Stability testing of unit loads
DIN EN ISO 3037 2013-12	Corrugated fibreboard - Determination of edgewise crush resistance (unwaxed edge method)
DIN EN ISO 12048 2001-04	Packaging - Complete, filled transport packages - Compression and stacking tests using a compression tester
DIN EN ISO 13355 2017-03	Packaging - Complete, filled transport packages and unit loads - Vertical random vibration test
DIN EN 14149 2003-11	Packaging - Complete, filled transport packages and unit loads - Impact test by rotational drop
DIN EN 60068-2-6 2008-10	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)
DIN EN 60068-2-13 2000-02	Environmental testing - Part 2: Tests; test M: Low air pressure
DIN EN 60068-2-27 2010-02	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock
DIN EN 60068-2-31 2009-04	Environmental testing - Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens

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DIN EN 60068-2-64 2009-04	Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance
DIN EN IEC 60721-3-2 2018-12	Classification of environmental conditions - Part 3-2: Classification of groups of environmental parameters and their severities - Transportation and Handling
DIN EN 22248 1993-02	Packaging; complete, filled transport packages; vertical impact test by dropping
DIN 55423-6 2017-01	Transportation chain for meat and meat products - Part 6: Pallet made from polyethylene, 800 mm × 1200 mm × 160 mm; Construction, requirements and test (here: <i>without chapter 5.3 color</i> )
DIN 55440-1 1991-11	Packaging test; compression test; test with a constant conveyance-speed
ASTM D 642-00 2015	Standard Test Method for Determining Compressive Resistance of Shipping Containers, Components, and Unit Loads
ASTM D 880-92 2015	Standard Test Method for Impact Testing for Shipping Containers and Systems
ASTM D 999-08 2015	Standard Test Methods for Vibration Testing of Shipping Containers
ASTM D 3078-02 2013	Standard Test Method for Determination of Leaks in Flexible Packaging by Bubble Emission
ASTM D 3575-14 2014	Standard Test Methods for Flexible Cellular Materials Made from Olefin Polymers
ASTM D 3332-99 2016	Standard Test Methods for Mechanical-Shock Fragility of Products, Using Shock Machines
ASTM D 4169-16 2016	Standard Practice for Performance Testing of Shipping Containers and Systems
ASTM D 4332-14 2014	Standard Practice for Conditioning Containers, Packages, or Packaging Components for Testing
ASTM D 4728-06 2012	Standard Test Method for Random Vibration Testing of Shipping Containers

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ASTM D 5265-09 2016	Standard Test Method for Bridge Impact Testing
ASTM D 5276-98 2017	Standard Test Method for Drop Test of Loaded Containers by Free Fall
ASTM D 5277-92 2015	Standard Test Method for Performing Programmed Horizontal Impacts Using an Inclined Impact Tester
ASTM D 6344-04 2017	Standard Test Method for Concentrated Impacts to Transport Packages
ASTM D 5487-16 2016	Standard Test Method for Simulated Drop of Loaded Containers by Shock Machines
ASTM D 6179-07 2014	Standard Test Methods for Rough Handling of Unitized Loads and Large Shipping Cases and Crates
ASTM D 6653-13 2013	Standard Test Methods for Determining the Effects of High Altitude on Packaging Systems by Vacuum Method
ASTM F 88/F 88 M-15 2015	Standard Test Method for Seal Strength of Flexible Barrier Materials
ASTM F 1886-16 2016	Standard Test Method for Determining Integrity of Seals for Flexible Packaging by Visual Inspection
ASTM F 1929-15 2015	Standard Test Method for Detecting Seal Leaks in Porous Medical Packaging by Dye Penetration
ASTM F 2096-11 2011	Standard Test Method for Detecting Gross Leaks in Medical Packaging by Internal Pressurization (Bubble Test)
ISTA 1A 2016-01	Non-Simulation Integrity Performance Test Procedure - Packaged-Products 150 lb (68 kg) or Less
ISTA 1B 2016-01	Non-Simulation Integrity Performance Test Procedure - Packaged-Products over 150 lb (68 kg)
ISTA 1C 2014-03	Non-Simulation Integrity Performance Test Procedure - Extended Testing for Packaged-Products 150 lb (68 kg) or Less
ISTA 1D 2014-03	Non-Simulation Integrity Performance Test Procedure - Extended Testing for Packaged-Products over 150 lb (68 kg)

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ISTA 1E 2014-03	Non-Simulation Integrity Performance Test Procedure - Unitized Loads of Same Product
ISTA 1G 2014-03	Non-Simulation Integrity Performance Test Procedure - Packaged-Products 150 lb (68 kg) or Less (Random Vibration)
ISTA 1H 2014-03	Non-Simulation Integrity Performance Test Procedure - Packaged-Products over 150 lb (68 kg) (Random Vibration)
ISTA 2A 2012-01	Partial Simulation Performance Test Procedure - Packaged-Products 150 lb (68 kg) or Less
ISTA 2B 2012-10	Partial Simulation Performance Test Procedure - Packaged-Products over 150 lb (68 kg)
ISTA 2C 2012-01	Partial Simulation Performance Test Procedure - Furniture Packages
ISTA 2D 2014-03	Partial Simulation Performance Test Procedure - Flat Packaged-Products for Parcel Delivery System Shipment
ISTA 2E 2010-01	Partial Simulation Performance Test Procedure - Elongated Package Products for Parcel Delivery System Shipment
ISTA 2F 2011-01	Partial Simulation Performance Test Procedure - Performance Testing of Shipping Containers for LTL Shipment, National Motor Freight Classification Item 180
ISTA 3A 2018	General Simulation Performance Test Procedure - Packaged-Products for Parcel Delivery System Shipment 70 kg (150 lb) or Less
ISTA 3B 2013-01	General Simulation Performance Test Procedure - Packaged-Products for Less-Than-Truckload (LTL) Shipment
ISTA 3E 2017-04	General Simulation Performance Test Procedure - Unitized Products of Same Product
ISTA 3F 2012-01	General Simulation Performance Test Procedure - Packaged-Products for Distribution Center to Retail Outlet Shipment 100 lb (45 kg)
ISTA 3H 2014-01	General Simulation Performance Test Procedure - Products or Packaged-Products in Mechanically Handled Bulk Transport Containers
ISTA 3K 2013-01	General Simulation Performance Test Procedure - Fast Moving Consumer Goods in the European Retail Supply Chain

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ISTA 6-AMAZON.COM-Over  
Boxing  
2018-03

e-Commerce Fulfillment for Parcel Delivery Shipment

ISTA 6-AMAZON.COM-SIOC  
2018-03

Ships in Own Container (SIOC) for Amazon.com Distribution  
System Shipment

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Type of test	Measurand / Test parameter	Measurement and test range	Exemplary test methods
Pressure test Compression test Stacking test	Force	5 - 10 kN 2 - 200 kN	DIN 55440-1 DIN EN ISO 12048
	Indentation	1 to 1.650 mm	DIN EN ISO 2234 ASTM D642-00
	Elongation	1 to 1.650 mm	ASTM 4169-09 ISTA Series
Vibration test Shock test Bounce	Force vector	Sinus: max. 56 kN Noise: max. 56 kN Shock: max. 53 kN	DIN EN 60068-2-6 DIN EN 60068-2-27 DIN EN 60068-2-64 DIN EN ISO 8318 DIN EN ISO 13355 ASTM 4169-09 ISTA Series
	Vibration amplitude Peak-to-peak	max. 48,0 mm	
	Vibration velocity	Standard max. 1,6 m/s	
	Acceleration	max. 300 m/s <sup>2</sup>	
	Frequency range	3 Hz to 2.000 Hz	
Climatic test	Temperature	-10 °C to +60 °C	DIN EN 60068-2-30 DIN EN 60068-2-78 ISTA Series
	Relative humidity	10 % to 95 %	
Temperature test	Temperature	-40 °C to +60 °C	DIN EN 60068-2-1 DIN EN 60068-2-2 ISTA Series
Horizontal impact	Velocity	to 2,5 m/s	DIN EN ISO 2244 ASTM D 880-92 ISTA Series
Drop test	Free fall	to 2.000 mm	DIN EN 60068-2-32 DIN EN 22248 ASTM D 5276-98 ISTA Series
Low pressure test	Pressure	1.000 to 500 mbar at 23 °C	DIN EN ISO 2873 ASTM D 6653

\*) smallest achievable measurement uncertainty

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**Abbreviations used:**

ASTM	American Society for Testing and Materials
DIN	German Institute for Standardization
EN	European Standard
ISO	International Organization for Standardization
ISTA	International Safe Transit Association

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