

Deutsche Akkreditierungsstelle GmbH

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV

Signatory to the Multilateral Agreements of
EA, ILAC and IAF for Mutual Recognition

Accreditation



The Deutsche Akkreditierungsstelle GmbH attests that the testing laboratory

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

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following 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 shock tests and their components

The accreditation certificate shall only apply in connection with the notice of accreditation of 19.05.2014 with the accreditation number D-PL-11272-01 and is valid until 03.01.2018. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 5 pages.

Registration number of the certificate: **D-PL-11272-01-00**

Berlin, 18.08.2014

signed Ralf Egnér
Head of Division

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

See notes overleaf.



Deutsche Akkreditierungsstelle GmbH

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The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkkS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkkS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAkkS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Co-operation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:

EA: www.european-accreditation.org

ILAC: www.ilac.org

IAF: www.iaf.nu

Deutsche Akkreditierungsstelle GmbH

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

Period of validity: 19.05.2014 to 03.01.2018

Date of issue: 18.08.2014

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 combination

Abbreviations used: see last page

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

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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 2873 2002-12	Packaging - Complete, filled transport packages and unit loads - Low pressure test
DIN ISO 10531 2000-03	Packaging - Complete, filled transport packages - Stability testing of unit loads
DIN EN ISO 12048 2001-04	Packaging - Complete, filled transport packages - Compression and stacking tests using a compression tester
DIN EN ISO 13355 2003-10	Packaging - Complete, filled transport packages and unit loads - Vertical random vibration test
DIN EN 60068-2-6 2008-10	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)
DIN EN 60068-2-27 2010-02	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock
DIN EN 60068-2-64 2009-04	Environmental testing - Part 2: Test methods - Test Fh: Vibration, broad-band random (digital control) and guidance
DIN EN 22248 1993-02	Packaging - Complete, filled transport packages - Vertical impact test by dropping
DIN 55440-1 1991-11	Packaging test - Compression test - Test with a constant conveyance-speed
ASTM D 642-00 2010-04	Standard Test Method for Determining Compressive Resistance of Shipping Containers, Components, and Unit Loads
ASTM D 880-92 1992-11	Standard Test Method for Impact Testing for Shipping Containers and Systems
ASTM D 999-08 2008-08	Standard Test Methods for Vibration Testing of Shipping Containers
ASTM D 3575-14 2014	Standard Test Methods for Flexible Cellular Materials Made From Olefin Polymers
ASTM D 3332-99 2010-01	Standard Test Methods for Mechanical-Shock Fragility of Products, Using Shock Machines

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ASTM D 4169-09 2009-11	Standard Practice for Performance Testing of Shipping Containers and Systems
ASTM D 4332-01 2006-11	Standard Practice for Conditioning Containers, Packages, or Packaging Components for Testing
ASTM D 4728-06 2012-04	Standard Test Method for Random Vibration Testing of Shipping Containers
ASTM D 5276-98 2009-03	Standard Test Method for Drop Test of Loaded Containers by Free Fall
ASTM D 5277-92 2008-04	Standard Test Method for Performing Programmed Horizontal Impacts Using an Inclined Impact Tester
ASTM D 5487-98 2008-04	Standard Test Method for Simulated Drop of Loaded Containers by Shock Machines
ASTM D 6179-07 2007	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
ISTA 1A 2010-01	Non-Simulation Integrity Performance Test Procedure - Packaged-Products 150 lb (68 kg) or Less
ISTA 1B 2010-01	Non-Simulation Integrity Performance Test Procedure - Packaged-Products over 150 lb (68 kg)
ISTA 1C 2011-01	Non-Simulation Integrity Performance Test Procedure - Extended Testing for Packaged-Products 150 lb (68 kg) or Less
ISTA 1D 2011-01	Non-Simulation Integrity Performance Test Procedure - Extended Testing for Packaged-Products over 150 lb (68 kg)
ISTA 1E 2010-01	Non-Simulation Integrity Performance Test Procedure - Unitized Loads of Same Product
ISTA 1G 2010-01	Non-Simulation Integrity Performance Test Procedure - Packaged-Products 150 lb (68 kg) or Less (Random Vibration)
ISTA 1H 2010-01	Non-Simulation Integrity Performance Test Procedure - Packaged-Products over 150 lb (68 kg) (Random Vibration)

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ISTA 2A 2011-01	Partial Simulation Performance Test Procedure - Packaged-Products 150 lb (68 kg) or Less
ISTA 2B 2011-01	Partial Simulation Performance Test Procedure - Packaged-Products over 150 lb (68 kg)
ISTA 2C 2011-01	Partial Simulation Performance Test Procedure - Furniture Packages
ISTA 2D 2010-01	Partial Simulation Performance Test Procedure - Flat Packaged-Products for Parcel Delivery System Shipment
ISTA 2E 2010-01	Partial Simulation Performance Test Procedure - Elongated Packaged-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 2011-01	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 2011-01	General Simulation Performance Test Procedure - Unitized Products of Same Product
ISTA 3F 2010-01	General Simulation Performance Test Procedure - Packaged-Products for Distribution Center to Retail Outlet Shipment 100 lb (45 kg)
ISTA 3H 2011-01	General Simulation Performance Test Procedure - Products or Packaged-Products in Mechanically Handled Bulk Transport Containers
ISTA 3K 2011-01	General Simulation Performance Test Procedure - Fast Moving Consumer Goods in the European Retail Supply Chain

Type of test	Measurand / Test parameters	Measurement and test range	Measurement uncertainty*)	Exemplary test methods
Pressure test Compression test Stacking test	Force	5 - 10 kN 2 - 200 kN	Clas 1	DIN 55440-1 DIN EN ISO 12048 DIN EN ISO 2234 ASTM D642-00 ASTM 4169-09 ISTA Series
	Indentation	1 to 1,650 mm	1 %	
	Elongation	1 to 1,650 mm	1 %	
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 ²	3 %	
	Frequency range	3 Hz to 2,000 Hz	0.1 %	
Climatic test	Temperature	-10 °C to +60 °C	0.5 K	DIN EN 60068-2-30 DIN EN 60068-2-78 ISTA Series
	Relative humidity	10 % to 95 %	3 % r. F.	
Temperature test	Temperature	-40 °C to +60 °C	0.5 K	DIN EN 60068-2-1 DIN EN 60068-2-2 ISTA Series
Horizontal impact	Velocity	to 2.5 m/s	3.5 %	DIN EN ISO 2244 ASTM D 880-92 ISTA Series
Drop test	Free fall	to 2,000 mm	1 %	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	30 mbar	DIN EN ISO 2873 ASTM D 6653

*) smallest achievable measurement uncertainty

abbreviations used:

ASTM American Society for Testing and Materials
ISTA International Safe Transit Association