

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-11195-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 03.09.2020

Date of issue: 03.09.2020

Holder of certificate:

**SCUS GmbH Service Center Umweltsimulation
Heidelberger Straße 20, 01189 Dresden**

Tests in the fields:

Mechanical and climatic environmental simulation tests of packaging materials, packages, packing pieces, (area of packaging) and technical products, such as climate, low pressure, shock- vibrations- and impact tests as well as their combination

Within the given testing field marked with *, 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.

Abbreviations used: see last page

1 Environmental simulation tests of packaging materials *

Type of test	Measurement / Test parameters	Exemplary test methods
Compression test, Stacking test	Strength	DIN EN ISO 12048 ASTM D642-15 ASTM D4169-16
	Upsetting	
	Strain	
Tensile test, Tensile properties of plastic	Strength	ASTM F88-15
Vibration, Random, Sine, Shock, Repetitive Shock test	Force	DIN EN ISO 8318 DIN EN ISO 13355 ASTM D4169-16 ASTM D999-08R15 ASTM D4728-17
	Displacement Peak-Peak	
	Velocity	
	Acceleration	
	Frequency	
Climate test	Temperature	DIN EN ISO 2233
	Relative humidity	ASTM D4332-14
Temperature	Temperature	ISTA Series
Horizontal impact	Velocity	DIN EN ISO 2244 ASTM D880-92R15
Drop test	Drop	DIN EN 22248 ASTM D5276-98R17
Low pressure test	Low pressure	DIN EN ISO 2873 ASTM D6653-01R06

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Characteristic test methods:

DIN EN 13054 2001-05	Packaging - Complete, filled transport packages - Test methods for the determination of the Centre of gravity of a package
DIN EN 22248 1993-02	Packaging - Complete, filled transport packages -; vertical impact test by dropping
DIN EN 28768 1993-02	Packaging - Complete, filled transport packages -; toppling test
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 - Stacking tests using a static load
DIN EN ISO 12048 2001-04	Packaging - Complete, filled transport packages - Compression and stacking tests using a compression tester
DIN EN ISO 2247 2002-12	Packaging - Complete, filled transport packages - Compression and stacking tests using a compression tester
DIN EN ISO 8318 2002-12	Packaging - Complete, filled transport packages and unit loads - Sinusoidal vibration tests using a variable frequency
DIN EN ISO 13355 2017-03	Packaging - Complete, filled transport packages and unit loads - Vertical random vibration test
DIN EN 15552 2008-11	Packaging - Complete, filled transport packages and unit loads - Performance testing schedules for common distribution chains
DIN EN 22206 1993-02	Packaging; complete, filled transport packages; identification of parts when testing
DIN EN ISO 4180 2010-12	Packaging - Complete, filled transport packages - General rules for the compilation of performance test schedules
DIN EN ISO 2233 2001-11	Packaging - Complete, filled transport packages and unit loads - Conditioning for testing
DIN EN ISO 2873 2002-12	Packaging - Complete, filled transport packages and unit loads - Low pressure test
ISTA Resource Book 2019	Guideline Transport

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ASTM D 642-15 2015	Standard Test Method for Determining Compressive Resistance of Shipping Containers, Components and Unit Loads
ASTM D 4169-16 2016	Standard Practice for Performance Testing of Shipping Containers and Systems
ASTM 6653 2013	Standard Test Methods for Determining the Effects of High Attitude on Packaging Systems by vacuum Method
ASTM D 5276 2019	Standard Test Method for Drop Test of Loaded Containers by Free Fall
ASTM D 999 - 08 Reapproved 2015	Standard Test Methods for Vibration Testing of Shipping Containers
ASTM D 4728-17 2017	Standard Test Method for Random Vibration Testing of Shipping Containers
ASTM D 4332-14 2014	Standard Practice for Conditioning Containers, Packages, or Packaging Components for Testing
ASTM D 6344 - 04 Reapproved 2017	Standard Test Method for Concentrated Impacts to Transport Packages
ASTM D 880 – 92 Reapproved 2015	Standard Test Method for Impact Testing for Shipping Containers and Systems
ASTM D 6179 - 07 Reapproved 2014	Standard Test Methods for Rough Handling of Unitized Loads and Large Shipping Cases and Crates
ASTM F 88/F 88M Reapproved 2015	Standard Test Method for Seal Strength of Flexible Barrier Materials

2 Environmental simulation tests in the area of technical products *

Type of test	Measurement / Test parameters	Exemplary test methods
Vibration, Random, Sine, Shock, Repetitive Shock test	Force	DIN EN 60068-2-6 DIN EN 60068-2-27 DIN EN 60068-2-64
	Displacement Peak-Peak	
	Velocity	
	Acceleration	
	Frequency	
Climate test	Temperature	DIN EN 60068-2-30
	Relative humidity	DIN EN 60068-2-78
Temperature	Temperature	DIN EN 60068-2-1 DIN EN 60068-2-2

Characteristic test methods:

DIN EN 61373 2011-04	Railway applications - Rolling stock equipment - Shock and vibration tests
DIN EN 60068-2-1 2008-01	Environmental testing - Part 2-1: Tests - Test A: Cold
DIN EN 60068-2-2 2008-05	Environmental testing - Part 2-2: Tests - Test B: Dry heat
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 60068-2-30 2006-06	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)
DIN EN 60068-2-64 2009-04	Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance

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DIN EN 60068-2-78
2014-02

Environmental testing - Part 2-78: Tests - Test Cab: Damp heat,
steady state

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