Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-11296-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 06.08.2019

Date of issue: 25.04.2022

Holder of certificate:

PMZ Prüf- und Messtechnik Zentrum Kassel GmbH

with the locations

Ellenbacher Straße 2, 34123 Kassel
Dormannweg 48, 34123 Kassel

Tests in the fields:

Static and dynamic tests of metallic materials and structural components;
Structural integrity tests;
Vibration and shock tests as well as corrosion tests and environmental simulations

The laboratory is permitted within the specified testing areas indicated with *, without being required to inform and obtain prior approval from the DAkkS, the free choice of standard or equivalent test methods.
The listed test methods are exemplary.

Within the specific testing areas indicated with **, without being required to inform and obtain prior approval from the DAkkS, the laboratory is permitted to use standard test methods listed here with different issue dates or revision status updates .

The laboratory maintains a current list of all test methods in a flexible scope of accreditation.

The tests are conducted at the following locations as indicated as follows:

E = Ellenbacher Straße 2 D = Dormannweg 48

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

Abbreviations used: see last page

1 Static and dynamic tests, structural integrity tests, vibration and shock tests as well as environmental simulations * (E, D)

Test type	Measurand / test parameter	Measurement / test range	Characteristic test methods
Tensile / force load	Force / Displacement - quasistatic -	200 N - 6.300 kN / 0,01 mm - 10 m	DIN EN 16019, cl. 5.1.2 2014-07 DIN EN 12663-1, cl. 8, 9 2015-03 DIN EN 12663-2, cl. 3 2007-10 VDI/VDE/GESA 2635, sheet 1 2015-07
	Force/ Displacement - dynamic -	200 N - 630 kN / 0,01 mm - 10 m	DIN EN 12663-1, cl. 8.3 2015-03 DIN EN 12663-2, cl. 3 2007-10 DIN 50100, cl. 8.2: 2016-12 UIC 566: 1990-01 VDI/VDE/GESA 2635, sheet 1 2015-07
Acceleration	Maximal acceleration	50 g	DIN IEC 61373: 2011-04 IEC 61373: 2010-05 DIN EN 60068-2-6: 2008-10 DIN EN 60068-2-64: 2009-04 DIN EN 60068-2-27: 2010-02 DIN EN 14067-5, cl. 4, 5 and 6: 2011-01, DIN EN 60310, cl. 13.2.16 2017-01
	Frequency range	2 - 2000 Hz	
	<u>Vibration</u> max. vibration distance max. test load dimension	100 mm Up to 6000 kg 1000x1000 mm 1900x3335 mm 3060x4000 mm (Extension possible)	

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Material elongation	DMS-elongation	10 µm/m till 10 mm/m	DIN EN 12663-1, cl. 8.2 and cl. 8.3: 2015-03 DIN EN 12663-2, cl. 3 2007-10 DIN 50100, cl. 8.2: 2016-12 UIC 566: 1990-01 DIN EN 16019, cl. 5.1.2 2014-07 VDI/VDE/GESA 2635, sheet 1 2015-07
Internal pressure tests	pressure	from 1 bar till 1000 bar	DIN EN ISO 6803, cl. 4, 8, 9 and 10: 2017-07
cold dry heat	Temperature	-80° C till + 1.000°C	DIN EN 60068-2-1: 2008-01 DIN EN 60068-2-2: 2008-05

2 Structural integrity ** (E, D)

DIN EN ISO 6803 2017-07	Rubber or plastics hoses and hose assemblies - Hydraulic-pressure impulse test without flexing (here: *only Cl. 4, 8, 9 and 10*)
DIN EN 12663-1 2015-03	Railway applications - Structural requirements of railway vehicle bodies - Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons) (here: *only Cl. 8.2 and 8.3*)
DIN EN 12663-2 2010-07	Railway applications - Structural requirements of railway vehicle bodies - Part 2: Freight wagons (here: *only Cl. 3*)
DIN EN 16019 2014-06	Railway applications - Automatic coupler - Performance requirements, specific interface geometry and test method (here: *only Cl. 5.1.2*)
DIN 50100 2016-12	Load controlled fatigue testing - Execution and evaluation of cyclic tests at constant load amplitudes on metallic specimens and components (here: *only Cl. 8.2*)
UIC 566 1990-01	Loadings of coach bodies and their components

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VDI/VDE/GESA 2635 Sheet 1 2015-07	Experimental structure analysis - Metallic bonded resistance strain gauges - Characteristics and testing conditions

3 Static and dynamic tests ** (E, D)

DIN EN 12663-1 2015-03	Railway applications - Structural requirements of railway vehicle bodies - Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons) (here: *only Cl. 8.2 und 8.3*)
DIN EN 12663-2 2010-07	Railway applications - Structural requirements of railway vehicle bodies - Part 2: Freight wagons (here: *only Cl. 3*)
DIN EN 16019 2014-06	Railway applications - Automatic coupler - Performance requirements, specific interface geometry and test method (here: *only Cl. 5.1.2*)
UIC 566 1990-01	Loadings of coach bodies and their components
VDI/VDE/GESA 2635 Sheet 1 2015-07	Experimental structure analysis - Metallic bonded resistance strain gauges - Characteristics and testing conditions

4 Structural integrity tests ** (E, D)

DIN EN 12663-1 2015-03	Railway applications - Structural requirements of railway vehicle bodies - Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons) (here: *only Cl. 8.2 und 8.3*)
DIN EN 12663-2 2010-07	Railway applications - Structural requirements of railway vehicle bodies - Part 2: Freight wagons (here: *only Cl. 3*)
DIN EN 16019 2014-06	Railway applications - Automatic coupler - Performance requirements, specific interface geometry and test method (here: *only Cl. 5.1.2*)

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DIN 50100 2016-12	Load controlled fatigue testing - Execution and evaluation of cyclic tests at constant load amplitudes on metallic specimens and components (here: *only Cl. 8.2*)
UIC 566 1990-01	Loadings of coach bodies and their components
VDI/VDE/GESA 2635 Sheet 1 2015-07	Experimental structure analysis - Metallic bonded resistance strain gauges - Characteristics and testing conditions

5 Vibration and shock tests ** (E, D)

DIN EN 61373 1999-11	Railway applications - Rolling stock equipment - Shock and vibration tests *(withdrawn standard)*
DIN EN 61373 2011-04	Railway applications - Rolling stock equipment - Shock and vibration tests
IEC 61373 2010-05	Railway applications - Rolling stock equipment - Shock and vibration tests
DIN EN 60068-2-64 VDE 0468-2-64 2009-04	Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance
DIN EN 60068-2-6 VDE 0468-2-6 2008-10	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)
DIN EN 60068-2-27 VDE 0468-2-27 2010-02	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock
DIN EN 14067-5 2011-01	Railway applications - Aerodynamics - Part 5: Requirements and assessment procedures for aerodynamics in tunnels (here: *only Cl. 4, 5 und 6*)
DIN EN 60310 2017-01	Railway applications - Traction transformers and inductors on board rolling Stock (here: *only Cl. 13.2.16*)

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6 Corrosion tests as well as temperature and climatic tests ** (E)

DIN EN ISO 2409 2013-06	Paints and varnisches - cross cut test
DIN EN ISO 9227 2012-09	Corrosion tests in artificial atmospheres - Salt spray tests (here: *method: NSS - Neutral Salt sprayl*)
DIN EN ISO 6270-2 2018-04	Paints and varnishes - Determination of resistance to humidity - Part 2: Condensation (in-cabinet exposure with heated water reservoir) (here: *only for CH (constant climate*)
DIN EN 60068-2-1 2008-01	Environmental testing - Part 2-1: Tests - Test A: Cold
DIN EN ISO 60068-2-11 2000-02	Environmental testing - Part 2: Tests; test Ka: Salt mist
DIN EN 60068-2-2 2008-05	Environmental testing - Part 2-2: Tests - Test B: Dry heat
DIN 50017 1982-10	Atmospheres and their technical application; Condensation water test atmospheres *(withdrawn standard)*
DIN 50021 1988-06	Spray tests with different sodium chloride solutions (here: *only NSS tests*) *(withdrawn standard)*
VDA 621-415 1982-02	Testing of Corrosion Protection of Vehicle Paint by Alternating Cycles Test
ASTM B117 2016	Standard practice for operating salt spray (fog) apparatus

6.1 Corrosion tests as well as climatic and temperature tests for test methods without flexible accreditation

AMS 2700 Rev. E 2011-11	Passivation of corrosion resistant steels
Mercedes-Benz: P B V WT 217 1997-04	Indoor corrosion test of vehicle components

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Volkswagen AG: VW 50554 2015-07	Normal climate and room temperatures – requirements for test climate
Volkswagen AG: VW PV 1210 2016-02	Body and add on parts; corrosion test

7 Material properties ** (E, D)

VDI/VDE/GESA 2635 Sheet 1 2015-07	Experimental structure analysis - Metallic bonded resistance strain gauges - Characteristics and testing conditions

Applied abbreviations:

AMS	Aerospace Material Specification
ASM	ASM International (originally: American Society for Metals)
ASTM	ASTM International (originally: American Society for Testing and Materials)
DIN	Deutsches Institut für Normung e.V. German Institute of standardisation
EN	European standard
FKM	Forschungskuratorium Maschinenbau - Research Trustee Board of Mechanical Engineering
GESA	Gemeinschaft Experimentelle Strukturanalyse - Community of experimental structure analyse
IEC	International Electrotechnical Commission
ISO	International Organisation for Standardisation
UIC	Union internationale des chemins de fer (Internationaler Eisenbahnverband) International railway association
VDA	Verband der Automobilindustrie e. V. Automobile industry association
VDE	Verband Deutscher Elektriker (heute: Verband der Elektrotechnik, Elektronik und Informationstechnik e. V.) German Association of electrotechnic, electronic and information technology
VDI	Verein Deutscher Ingenieure - German Association of Engineers
VW PV	Volkswagen AG, Prüfvorschrift - Test method of VW

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