DAkkS
Deutsche
Akkreditierungsstelle

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

iLF Forschungs- und Entwicklungsgesellschaft Lacke und Farben mbH
Fichtestraße 29, 39112 Magdeburg

is competent under the terms of DIN EN ISO/IEC 17025:2018 to carry out tests in the following fields:

material testing for characterization of physical, mechanical and optical properties, determination of resistance to chemicals, environmental simulation tests (weathering test, condensation test, corrosion test, temperature and climate tests), bending test, tensile test and impact test of coating materials, coatings, surfaces and materials;
testing of the decontamination of polymeric materials, particularly determination of coatings;
chemical-analytical analysis of substances such as inorganic and organic chemicals, pigments, dyestuffs, oil, fats, waxes, resins, emulsifiers, additives, surface active agents, polymeric and coating materials;
chemical analysis of tools, semi-finished products, components and assembly groups in the interior of automobiles (emission analysis)

The accreditation certificate shall only apply in connection with the notice of accreditation of 18.12.2019 with the accreditation number D-PL-18869-01. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 21 pages.

Registration number of the certificate: **D-PL-18869-01-00**

Berlin, 18.12.2019	Dipl.-Ing. (FH) Ralf Egner Head of Division	Translation issued: 03.03.2020	Head of Division

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

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

See notes overleaf.

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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 Cooperation (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-18869-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 18.12.2019

Date of issue: 05.02.2020

Holder of certificate:

iLF Forschungs- und Entwicklungsgesellschaft Lacke und Farben mbH
Fichtestraße 29, 39112 Magdeburg

Tests in the fields:

material testing for characterization of physical, mechanical and optical properties, determination of resistance to chemicals, environmental simulation tests (weathering test, condensation test, corrosion test, temperature and climate tests); bending test, tensile test and impact test of coating materials, coatings, surfaces and materials;
testing of the decontamination of polymeric materials, particularly determination of coatings;
chemical-analytical analysis of substances such as inorganic and organic chemicals, pigments, dyestuffs, oil, fats, waxes, resins, emulsifiers, additives, surface active agents, polymeric and coating materials;
chemical analysis of tools, semi-finished products, components and assembly groups in the interior of automobiles (emission analysis)

Within the scope of accreditation marked with *, the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use standards or equivalent testing methods listed here with different issue dates.
The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

Within the given testing field marked with **, the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the following 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.

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

Abbreviations used: see last page

1 Physical tests

1.1 Drying tests **

DIN EN ISO 9117-3 2010-07	Paints and varnishes - Drying tests - Part 3: Surface-drying test using ballotini
DIN EN ISO 9117-5 2012-11	Paints and varnishes - Drying tests - Part 5: Modified Bandow-Wolff test

1.2 Determination of coat thickness **

ASTM B 764 2004	Standard Test Method for Simultaneous Thickness and Electrode Potential Determination of Individual Layers in Multilayer Nickel Deposit (STEP Test)
DIN EN 16866 2018-01	Metallic and other inorganic coatings - Simultaneous thickness and electrode potential determination of individual layers in multilayer nickel deposits (STEP test)
DIN EN ISO 1456 2004-08	Metallic and other inorganic coatings - Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium
DIN EN ISO 1463 2004-08	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method
DIN EN ISO 2177 2004-08	Metallic coatings - Measurement of coating thickness - Coulometric method by anodic dissolution
DIN EN ISO 2178 2016-11	Non-magnetic coatings on magnetic substrates - Measurement of coating thickness - Magnetic method
DIN EN ISO 2360 2017-12	Non-conductive coatings on non-magnetic electrically conductive base metals - Measurement of coating thickness - Amplitude-sensitive eddy current method
DIN EN ISO 2808 2019-12	Paints and varnishes - Determination of film thickness (here: *only methods 6A, 7B.2, 7C*)
DIN 53100 2007-06	Metallic coatings - Electroplated coatings of nickel plus chromium and of copper plus nickel plus chromium on plastics materials

PV 1058 2015-04	Chromed surfaces - Determination of the Micro-Crack Pattern on Chrome-Plated Surfaces
PV 1063 2018-11	Chromed surfaces - Determination of Micropore Density
PV 1065 2013-04	Chromed surfaces - Determination of Potential Differences and Layer Thicknesses of Nickel Coatings

1.3 Determination of permeability **

DIN EN ISO 7783 2019-02	Paints and varnishes - Determination of water-vapour transmission properties - Cup method
DIN EN 927-5 2007-03	Paints and varnishes - Coating materials and coating systems for exterior wood - Part 5: Assessment of the liquid water permeability
DIN EN 1062-3 2008-04	Paints and varnishes - Coating materials and coating systems for exterior masonry and concrete - Part 3: Determination of liquid water permeability

2 Mechanical tests

2.1 Determination of technological characteristic values **

DIN EN ISO 1519 2011-04	Paints and varnishes - Bend test (cylindrical mandrel)
DIN EN ISO 1520 2007-11	Paints and varnishes - Cupping test
DIN EN ISO 1522 2007-04	Paints and varnishes - Pendulum damping test
DIN EN ISO 6272-1 2011-11	Paints and varnishes - Rapid-deformation (impact resistance) tests - Part 1: Falling-weight test, large-area indenter
PV 3905 2015-04	Organic materials - Ball Drop Test
PV 3966 2016-12	PP components - Stress Whiening Properties (Ball Drop Test)

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2.2 Test of coating adhesion strength

2.2.1 Pull-off test **

DIN EN 1542 1999-07	Products and systems for the protection and repair of concrete structures - Test methods - Measurement of bond strength by pull-off
DIN EN ISO 4624 2016-08	Paints and varnishes - Pull-off test for adhesion
DIN EN ISO 16276-1 2007-08	Corrosion protection of steel structures by protective paint systems - Assessment of, and acceptance criteria for, the adhesion/cohesion (fracture strength) of a coating - Part 1: Pull-off testing

2.2.2 Cross-cut testing and X-cut testing **

AA-0180 2018-11	Cross cut test
DIN EN ISO 2409 2013-06	Paints and varnishes - Cross-cut test
DIN EN ISO 16276-2 2007-08	Corrosion protection of steel structures by protective paint systems - Assessment of, and acceptance criteria for, the adhesion/cohesion (fracture strength) of a coating - Part 2: Cross-cut testing and X-cut testing
FLTM BI 106-01 2017-05	Coating adhesion test
NES M 0007 2011-02	Testing method for automotive paint (here: *Item 29: Adhesion test method*)

2.2.3 Determination of scratch resistance **

MAN 277 2005-07	Coatings - Adhesion test (scratch test)
MBN 10494-5 2016-03	Paint test methods - Part 5: Technical-mechanical tests (here: *Chapter 5.1.1 Manual scratch test*)

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2.3 Determination of stone-chip resistance **

DBL 5416 2017-08	Parts Manufactured from Thermoplastics for Paneling, Housings and Functional Parts for External Applications (here: *Section 12.5: Multi-impact test*)
DIN EN ISO 20567-1 2017-07	Paints and varnishes - Determination of stone-chip resistance of coatings - Part 1: Multi-impact testing
FLTM BI 157-06 2001-03	High performance stone chip resistance test new rating scale
MBN 10494-5 2016-03	Paint test methods - Part 5: Technical-mechanical Tests (here: *only chapter 5.2: stone chip resistance*)
NES M 0007 2011-02	Testing method for automotive paint (here: *Item 28.5: Test with gravelometer method B*)
TL 52711 2015-03	Underbody Panels - LWRT - cd floor cladding, Shields, damping trays, motor shield capsules (here: *only section 6.7: stone chip resistance*)

2.4 Vapour stream test **

DBL 5416 2017-08	Parts Manufactured from Thermoplastics for Paneling, Housings and Functional Parts for External Applications (here: *only section 12.6: Pressurized water jet test (steam jet test)*)
DIN EN ISO 16925 2014-06	Paints and varnishes - Determination of the resistance of coatings to pressure water-jetting
FLTM BO 160-04 2018-02	Resistance of painted plastic parts to high pressure cleaning operations
MBN 10494-5 2016-03	Paint Test Methods - Part 5: Technical-Mechanical Tests (here: *only chapter 5.3: Pressure water jet test*)
PV 1503 2018-10	Painting of metallic and non-metallic materials - Pressure Washer Test
STD4234 2004-05	Paints and varnishes - Determination of adhesion when subjected to high-pressure spraying with water

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VCS 1029/54719 2006-04	Paints and enamels - Adhesion, water spraying under high-pressure

2.5 Abrasion- and scratch test **

DIN 55654 2015-08	Scratch test using a linear abrasion tester (crockmeter)
DIN EN 13300 2002-11	Paints and varnishes - Water-borne coating materials and coating systems for interior walls and ceilings - Classification
DIN EN 60028-2-70 1996-07	Environmental testing - Part 2: Tests - Test Xb: Abrasion of markings and letterings caused by rubbing of fingers and hands
DIN EN ISO 105-X12 2016-11	Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing
DIN EN ISO 11998 2006-10	Paints and varnishes - Determination of wet-scrub resistance and cleanability of coatings
DIN EN ISO 1518-1 2019-10	Paints and varnishes - Determination of scratch resistance - Part 1: Constant-loading method
ISO 21546 2019-02	Paints and varnishes - Determination of the resistance to rubbing using a linear abrasion tester (crockmeter)
PV 3906 2018-12	Non-metallic surfaces - Testing of Abrasion Behavior
PV 3952 2019-03	Plastic interior components - Scratch Resistance Test
PV 3974 2010-11	Plastic interior components - Determination of the Mar Resistance of Precision-Molded Grained Surfaces in the Vehicle Interior
PV 3987 2016-11	Abrasion resistance (micro scratch resistance) of high-gloss surfaces in the vehicle interior

3 Optical tests

3.1 Colorimetry **

AA-0161 2018-04	Color Measurement on Bodies and Hang on Parts

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AA-0354 2016-02	Technical Understanding of Color Measurement and the Measurement of Test Panels for Initial and Batch Release
DIN 6167 1980-01	Description of yellowness of near-white or near-colourless materials
DIN EN ISO 6504-3 2007-05	Paints and varnishes - Determination of hiding power - Part 3: Determination of contrast ratio of light-coloured paints at a fixed spreading rate
DIN EN ISO 11664-4 2012-06	Colorimetry - Part 4: CIE 1976 L*a*b* Colour space
DIN EN ISO 18314-1 2018-12	Analytical colorimetry - Part 1: Practical colour measurement
DIN EN ISO 18314-2 2018-12	Analytical colorimetry - Part 2: Saunderson correction, solutions of the Kubelka-Munk equation, tinting strength, hiding power
DIN EN ISO 18314-3 2018-12	Analytical colorimetry - Part 3: Special indices
MBN 10494-4 2016-03	Paint Test Methods - Part 4: Optical Tests (here: *chapter 5.2.2 Color measurement*)
VdL-RL 09 2002-07	Guidance document on the determination of hiding power
VW 50190 2017-11	Components of the Vehicle interior trim - Metrological assessment of color and gloss level - Visual Evaluation of Chrome Surfaces (here: *Color*)

3.2 Determination of gloss values **

DIN EN ISO 2813 2015-02	Paints and varnishes - Determination of gloss value at 20°, 60° and 85°
MBN 10494-4 2016-03	Paint test methods - Part 4: Optical tests (here: *Chapter 5.1 Gloss measurement with a reflectometer*)
VW 50190 2017-11	Components of the Vehicle interior trim - Metrological assessment of color and gloss level - Visual Evaluation of Chrome Surfaces (here: *Degree of gloss*)

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3.3 Visual evaluation procedures **

DIN EN 20105-A02 1994-10	Textiles - Tests for colour fastness - Part A02: Grey scale for assessing change in colour
DIN EN 20105-A03 1994-10	Textiles - Tests for colour fastness - Part A03: Grey scale for assessing staining
DIN EN ISO 3668 2001-12	Paints and varnishes - Visual comparison of the colour of paints
DIN EN ISO 4628-1 2016-07	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 1: General introduction and designation system
DIN EN ISO 4628-2 2016-07	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering
DIN EN ISO 4628-3 2016-07	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting
DIN EN ISO 4628-4 2016-07	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 4: Assessment of degree of cracking
DIN EN ISO 4628-5 2016-07	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 5: Assessment of degree of flaking
DIN EN ISO 4628-6 2011-12	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 6: Assessment of degree of chalking by tape method
DIN EN ISO 4628-7 2016-07	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 7: Assessment of degree of chalking by velvet method
DIN EN ISO 4628-8 2013-03	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 8: Assessment of degree of delamination and corrosion around a scribe or other artificial defect

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DIN EN ISO 4628-10 2016-07	Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 10: Assessment of degree of filiform corrosion
MBN 10494-4 2016-03	Paint Test Methods - Part 4: Optical Tests (here: *Chapter 5.2.1 Visual color assessment*)
MBN 10494-6 2016-03	Paint Test Methods - Part 6: Climatic Tests (here: *Chapter 5.11 Evaluation of the results of climatic tests*)
VW 50190 2017-11	Components of the Vehicle interior trim - Metrological assessment of color and gloss level - Visual Evaluation of Chrome Surfaces (here: *Visual assessment of chrome surfaces*)

4 Tests of chemical resistance **

AA-0053 2017-04	Resistance of varnished surfaces in the interior to sunscreen
AA-0055 2018-05	Resistance testing of surfaces against chemicals
DBL 5416 2017-08	Parts Manutactured from Thermoplastics for Paneling, Housings and Functional Parts for External Applications (here: *Appendix A.2, Table 23, test No. A.2.9: Hot water test*)
DIN EN ISO 2812-1 2018-03	Paints and varnishes - Determination of resistance to liquids - Part 1: Immersion in liquids other than water
DIN EN ISO 2812-2 2019-03	Paints and varnishes - Determination of resistance to liquids - Part 2: Water immersion method
DIN EN ISO 2812-3 2019-08	Paints and varnishes - Determination of resistance to liquids - Part 3: Method using an absorbent medium
DIN EN ISO 2812-4 2018-03	Paints and varnishes - Determination of resistance to liquids - Part 4: Spotting methods
DIN EN ISO 2812-5 2018-12	Paints and varnishes - Determination of resistance to liquids - Part 5: Temperature-gradient oven method
FLTM BI 104-01 2003-01	Water immission test for painted parts and panels

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MBN 10494-7 2016-03	Varnish testing methods - Part 7: Resistance to chemicals, test mixtures and test concentrates
PV 4.6.3 2009-10	Paints and Varnishes - Resistance to Chemicals of Automotive Top Coats, Gradient Oven Method
PV 3964 2008-02	Surfaces in the vehicle interior - Testing of cream Resistance
VCS 1026,81779 2012-11	Paints and enamels - Chemical resistance

5 Environmental testing

5.1 Weathering tests

5.1.1 Xenon-arc lamps **

DIN EN ISO 105-B06 2004-07	Textiles - Tests for colour fastness - Part B06: Colour fastness and ageing to artificial light at high temperatures: Xenon arc fading lamp test
DIN EN ISO 4892-2 2013-06	Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps
DIN EN ISO 16474-2 2014-03	Paints and varnishes - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps
PV 1303 2015-11	Non-metallic materials - Exposure test for components of the vehicle interior
PV 1306 2008-02	Non-metallic materials - Exposure test to determine the tackiness of PP plastics
PV 1502 2016-11	Clearcoat for 2-layer metallic coatings - Crack resistance test
PV 3929 2018-03	Non-metallic materials - Weathering in dry-hot climate (exterior)
PV 3930 2017-11	Non-metallic materials - Weathering in humid and warm climates (exterior)

VDA 75202 2001-08	Materials of the motor vehicle interior - Color fastness test and aging behavior against light at high temperatures - Xenon arc light

5.1.2 Fluorescent UV lamps **

DIN EN 927-6 2018-12	Paints and varnishes - Coating materials and coating systems for exterior wood - Part 6: Exposure of wood coatings to artificial weathering using fluorescent UV lamps and water
DIN EN ISO 4892-3 2016-10	Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps
DIN EN ISO 16474-3 2014-03	Paints and varnishes - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps

5.2 Condensation test

5.2.1 Resistance to moisture **

DIN EN ISO 6270-1 2018-04	Paints and varnishes - Determination of resistance to humidity - Part 1: Condensation (single-sided exposure)
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)
ISO 11503 1995-07	Paints and varnishes - Determination of resistance to humidity (intermittent condensation)
MBN 10494-6 2016-03	Paint Test Methods - Part 6: Climatic Tests (here: *Chapter 5.1: Constant condensation climate, short name CH (Condensation atmosphere with constant humidity)*)

5.2.2 Resistance to humid atmospheres containing sulfur dioxide **

DIN 50018 2013-05	Testing in a saturated atmosphere in the presence of sulfur dioxide
DIN EN ISO 3231 1998-02	Paints and varnishes - Determination of resistance to humid atmospheres containing sulfur dioxide
DIN EN ISO 6988 1997-03	Metallic and other non-organic coatings - Sulfur dioxide test with general condensation of moisture

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5.3 Corrosion tests

5.3.1 Salt spray tests **

ASTM B 117 2018	Standard Practice for Operating Salt Spray (Fog) Apparatus
DIN EN ISO 9227 2017-07	Corrosion tests in artificial atmospheres - Salt spray tests
MBN 10494-6 2016-03	Paint Test Methods - Part 6: Climatic Tests (here: *Chapter 5.2: Salt spray test, short name NSS and Chapter 5.3: CASS test*)

5.3.2 Corrosion cycle tests **

ASTM G 85 2011	Standard Practice for Modified Salt Spray (Fog) Testing
DIN 55635 2019-05	Paints and varnishes - Cyclic corrosion testing of coating systems on materials and components in automotive construction
DIN EN ISO 11997-1 2018-01	Paints and varnishes - Determination of resistance to cyclic corrosion conditions - Part 1: Wet (salt fog)/dry/humid
DIN EN ISO 11997-2 2013-12	Paints and varnishes - Determination of resistance to cyclic corrosion conditions - Part 2: Wet (salt fog)/dry/humidity/UV light
MBN 10494-6 2016-03	Paint Test Methods - Part 6: Climatic Tests (here: *Chapter 5.4: Corrosion change test*)
PV 1207 2018-10	Attachment parts of aluminum - Corrosion test (Climate-corrosion change test)
PV 1208 2016-02	Recuperator of Al-alloy - Corrosion test (SWAAT)
PV 1209 2016-02	Attachments with a zinc or zinc alloy coating and attachments of AL-alloy (e. g. recuperator, refrigerant pipe) - Corrosion test (Climate corrosion change test)
PV 1210 2016-02	Car body and attachments - Corrosion test

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VDA 233-102 2013-06	Cyclic corrosion testing of materials and components in the automotive industry

5.4 Temperature and climatic tests **

AA-0326 2017-12	SCAB-Test
CETP 00.00-L-467 2009-03	Global laboratory accelerated cyclic corrosion test
DBL 5416 2017-08	Parts Manufactured from Thermoplastics for Paneling, Housings and Functional Parts for External Applications (here: *Chapter 12.7: Alternating climate test*)
DBS 918 020 2013-03	Labeling of rail vehicles - Self-adhesive films for external lettering and advertising (here: *Item 6.2.3: Temperature resistance*)
DBS 918 021 2015-07	Labeling of rail vehicles - self-adhesive foils for inside labeling (here: *Point 5.2.4: Liability due to temperature and temperature change resistance*)
DIN EN 3665 1997-08	Aerospace series - Test methods for paints and varnishes - Filiform corrosion resistance test on aluminium alloys
DIN EN ISO 4623-1 2019-01	Paints and varnishes - Determination of resistance to filiform corrosion - Part 1: Steel substrates
DIN EN ISO 4623-2 2016-12	Paints and varnishes - Determination of resistance to filiform corrosion - Part 2: Aluminium substrates
MBN 10494-6 2016-03	Paint Test Methods - Part 6: Climatic tests (here: *Chapter 5.5: Filiform test on painted aluminum parts according to Daimler*)
PR 303.5 2010-01	Climate change test for equipment parts
PV 1200 2004-10	Vehicle components - Testing the climate change resistance (+ 80/- 40) °C
PV 2005 2000-09	Vehicle components - Testing the climate change resistance

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PV 7201 2019-06	Alloy wheel, testing of filiform corrosion behavior
STD4445 2014-08	Accelerated corrosion test, version II (ACT2)
TL 211 2016-11	Paint Coatings on Exterior Plastic Parts - Requirements (here: *Section 5, Table 2, No. 5.1: Heat storage and No. 5.1.1: Cold storage*)
TL 212 2016-12	Oxide Coatings on Aluminum Parts - Surface Protection Requirements (here: *Section 3.7: Temperature resistance*)
TL 226 2018-04	Paintworks on Materials Used in the Vehicle Interior Trim Requirements (here: *Section 3.7, Table 3, No. 4.1: Heat resistance in the heating cabinet and No. 5.3: Hydrolysis storage*)
VCS 1027,1449 2014-02	Cyclic atmospheric corrosion test with salt load - Accelerated corrosion test, version II - ACT II
VW 96379 2006-04	Exterior - Inspection of attaching parts - Climate change test
VW 96380 2015-07	Corrosion test - Modified climate change test

6 Bending, tensile and impact tests

6.1 Bending tests **

DIN EN ISO 178 2019-08	Plastics - Determination of flexural properties
DIN EN ISO 14125 2011-05	Fibre-reinforced plastic composites - Determination of flexural properties (here: *Method A: Three-point method*)
TL 52711 2015-03	Underbody Panels - LWRT - cd floor cladding, shielding, damping troughs, engine shield capsules
PV 3919 2010-01	Nonwoven cushioning - Determination of compression hardness

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PV 3954 2009-07	ZSB floor coverings - determination of bending stiffness

6.2 Tensil tests **

DIN 53504 2017-03	Testing of rubber - Determination of tensile strength at break, tensile stress at yield, elongation at break and stress values in a tensile test
DIN EN 1464 2010-06	Adhesives - Determination of peel resistance of adhesive bonds - Floating roller method
DIN EN 29073-3 1992-08	Textiles - Test method for nonwovens - Part 3: Determination of tensile strength and elongation
DIN EN ISO 527-1 2019-12	Plastics - Determination of tensile properties - Part 1: General principles
DIN EN ISO 527-2 2012-06	Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics
DIN EN ISO 527-3 2019-02	Plastics - Determination of tensile properties - Part 3: Test conditions for films and sheets
DIN EN ISO 527-4 1997-07	Plastics - Determination of tensile properties - Part 4: Test conditions for isotropic and anisotropic fibre-reinforced plastic composites
DIN EN ISO 527-5 2010-01	Plastics - Determination of tensile properties - Part 5: Test conditions for unidirectional fibre-reinforced plastic composites
MBN 10494-8 2016-03	Paint Test Methods - Part 8: Adhesion of adhesives to the Coating (here: *Chapter 5.5: Balance weight liability on light alloy wheel surfaces*)
MBN 10526 2018-07	Test methods for self-adhesive components (here: *Chapter 6.3: Peele resistance*)
TL 239 2019-07	Surface Protection for Alloy Wheels - Requirements (here: *Section 3.5, Table 3, No. 5: Adhesion of balancing weights*)
PV 2034 2009-09	Non-metallic fabrics - Floating Roller Peel Test
PV 3973 2010-11	Elastomer O-rings - Determination of tensile strength, elongation at break and tension values in tensile tests

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6.3 Impact tests **

DIN 53435 2018-09	Testing of plastics - Bending test and impact test on dynstat test specimens (here: *Impact test*)
DIN EN ISO 179-1 2010-11	Plastics - Determination of Charpy impact properties - Part 1: Non-instrumented impact test

7 Burning tests **

DIN 75200 1980-09	Determination of burning behaviour of interior materials in motor vehicles
BSDM0500 2019-07	Flammability test method for interior materials
DBL 5307 2019-07	Flame retardant - interior parts - requirements and test regulations
GS 97038 2016-03	Determination of the burning behavior of materials used in the interior of motor vehicles
ISO 3795 1989-10	Road vehicles, and tractors and machinery for agriculture and forestry - Determination of burning behaviour of interior materials
TL 1010 2008-01	Materials for Vehicle Interiors - Burning Behavior - Material Requirements
PV 3357 2019-04	Insulation material - behavior when flame treatment with a burner, surface and edge flame treatment

8 Test of decontamination *

DIN 25415 2012-11	Radioactively contaminated surfaces - Method for testing and assessing the ease of decontamination
ISO 8690 1988-08	Decontamination of radioactively contaminated surfaces; method for testing and assessing the ease of decontamination

9 Chemical-analytical substance tests

9.1 Physico-chemical analysis methods *

DIN EN ISO 2811-1 2016-08	Paints and varnishes - Determination of density - Part 1: Pycnometer method
DIN EN ISO 3251 2019-09	Paints, varnishes and plastics - Determination of non-volatile-matter content
DIN EN ISO 11890-1 2007-09	Paints and varnishes - Determination of volatile organic compound (VOC) content - Part 1: Difference method

9.2 Gas chromatographic analysis methods **

DIN EN ISO 11890-2 2013-07	Paints and varnishes - Determination of volatile organic compound (VOC) content - Part 2: Gas-chromatographic method
DIN EN ISO 17895 2005-06	Paints and varnishes - Determination of the volatile organic compound content of low-VOC emulsion paints (in-can VOC)

9.3 Infrared spectroscopy **

DIN EN 1767 1999-09	Products and systems for the protection and repair of concrete structures - Test methods - Infrared analysis

9.4 Determination of the formaldehyde concentration by photometric analysis **

VdL-RL 03 2018-02	Guideline for determining the formaldehyde concentration in water-dilutable coating materials and polymer dispersions (here: *Acetylacetone method for determining the free in-can form aldehyde concentration*)

10 Analysis of Emission

10.1 Determination of fogging behavior using fogging equipment **

BSDM0503 2019-06	Fogging test method for non-metallic materials (here: *Method B*)
DIN 75201 2011-11	Determination of the fogging characteristics of trim materials in the interior of automobiles **-Translation-**

GMW3235 2016-08	Fogging characteristics of trim materials
ISO 6452 2007-06	Rubber- or plastics-coated fabrics - Determination of fogging characteristics of trim materials in the interior of automobiles
PV 3015 2019-03	Fogging behavior of interior materials – Determinig Condensable Constituents
Renault D45 1727 / - - G 2012-12	Interior trim materials and passenger compartment parts - Fogging
SAE J 1756 2006-08	Determination of the fogging characteristics of interior automotive materials
TSM0503G 2018-06	Fogging test method for non-metallic materials (here: *Method B*)
VCS 1027,2719 2004-01	Organic materials - Fogging

10.2 Determination of the smell behavior by sensory analysis **

BSDM0505 2019-06	Smell quality of non-metallic materials
FLTM BO 131-03 2017-05	Interior odor test
GMW3205 2016-08	Test method for determining the resistance to odor propagation of interior materials
PV 3900 2019-04	Components of the vehicle interior - Odor Test
Renault D49 3001 / - - E 2015-01	Odour emissions, internal equipment parts - Intensity evaluation and global odour characterization
TPJLR.52.458 2014-05	Determination and assessment of odour from interior trim materials, components and assemblies
TSM0505G 2013-05	Smell quality of non-metallic materials

-Translation-

VCS 1027,2729 2016-11	Organic materials - Odour of trim materials in vehicles
VDA 270 2018-06	Determination of the odor behavior of materials of the vehicle interior

10.3 Determination of formaldehyde emissions by photometric analysis **

AA-0061 2014-02	Determination of the emission of formaldehyde from non-metallic materials and components using HPLC (here: *no sample analysis*)
FLTM BZ 156-01 2011-07	Determination of formaldehyde, aldehyde, and ketone emissions from non-metallic components, parts and materials in the vehicle interior (here: *only Method A*)
PV 3925 2009-06	Polymer Materials - Measuring Emissions of Formaldehyde
Renault D40 3004 / - - A 2011-07	Analysis of formaldehyde and other carbonyl compounds (hier: *keine Probenanalyse*)
VCS 1027,2739 2004-03	Determination of formaldehyde emission from components in vehicle interiors
VDA 275 1994-07	Molded parts for the vehicle interior - Determination of formaldehyde release - Measuring method according to the modified bottle method

10.4 Determination of aldehyde and ketone emissions using HPLC **

AA-0061 2014-02	Determination of the emission of formaldehyde from non-metallic materials and components using HPLC (here: *without sampling*)
DIN ISO 16000-3 2013-01	Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air - Active sampling method (here: *without sampling*)
FLTM BZ 156-01 2011-07	Determination of formaldehyde, aldehyde, and ketone emissions from non-metallic components, parts and materials in the vehicle interior (here: *only Method B*)

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GMW15635 2017-01	Determination of aldehyde and ketone emissions from interior materials
Renault D40 3004 / - - A 2011-07	Analysis of formaldehyde and other carbonyl compounds (here: *without sampling*)
VDI 3862 Blatt 3 2000-12	Gaseous emission measurement - Measurement of aliphatic and aromatic aldehydes and ketones by DNPH method - Cartridges method (here: *without* sampling)

10.5 Determination of volatile organic compounds using gas chromatography using standard detection (FID) and mass selective detection (MSD)

10.5.1 Determination of VOC **

DIN ISO 16000-6 2012-11	Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS or MS-FID (here: *without sampling*)

10.5.2 Determination of the emission of organic compounds **

FLTM BZ 157-01 2011-03	Determination of organic emissions from non-metallic materials in vehicle interiors by Headspace Gas Chromatography
PV 3341 1995-03	Non-metallic materials for motor vehicle interiors - Determination of emission of organic compounds
VCS 1027,2749 2004-03	Determination of organic emission from non-metallic materials in vehicle interiors
VDA 277 1995-01	Non-metallic materials for motor vehicle interiors - Determination of the emission of organic compounds

10.5.3 Thermal desorption analysis of organic emissions **

PSA D10 5495	Test for interior materials vehicle - Evaluation of the amount of volatile organic compounds (VOCs) by thermodesorptions/GS/MS

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Renault D42 3109 / - - B 2011-10	Vehicle passenger compartment materials evaluation of the quantity of volatile organic compounds (VOC) by thermal desorption/GC/MS (FID)
VDA 278 2011-09	Thermal Desorption Analysis of Organic Emissions for the Characterization of Non-Metallic Materials for Automobiles
VW 96424 2017-04	Interior - Emission behavior - Thermal desorption analysis based on VDA 278

abbreviations used:

AA	Work instruction of the BMW AG
ASTM	American Society for Testing and Materials
BMW	Bayerische Motorenwerke AG
CETP	Corporate Engineering Test Procedure
DBL	Mercedes-Benz-Factory standard
DBS	Deutsche Bahn-Standard
DIN	German Institute for Standardization
EN	European standard
FLTM	Ford Laboratory Test Method
GMW	General Motors Worldwide Engineering Standard
GS	BMW Group Standard
ISO	International Organization for Standardization
MBN	Mercedes-Benz-Works standard
NES	Nissan Engineering Standard
PR	Specification of the BMW AG
PSA	Peugeot Société Anonyme
PV	Specification of the VW AG
RL	Guidelilne
SAE	Society of Automotive Engineers
STD	Scania Standard
TL	Technical delivery conditions of the VW AG
TPJLR	Jaguar Cars & Land Rover - Engineering Test Procedure
VCS	Volvo-Car-Corporation Standard
VDA	Association of the Automotive Industry
VdL	Association of the German paint and printing ink industry
VW	Volkswagen AG

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