

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-18869-01-00 according to DIN EN ISO/IEC 17025:2005

Indefinite since: 23.11.2018

Date of issue: 17.09.2018

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 and tensile test of coating materials, coatings, surfaces and materials**

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.

**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 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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1 Physical tests

1.1 Tests of coating materials *

DIN EN ISO 2811-1 2016-08	Paints and varnishes - Determination of density - Part 1: Pycnometer method
DIN EN ISO 3251 2008-06	Paints, varnishes and plastics - Determination of non-volatile-matter content
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 *

DIN EN ISO 1463 2004-08	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method
DIN EN ISO 2178 2016-11	Non-magnetic coatings on magnetic substrates - Measurement of coating thickness - Magnetic method
DIN EN ISO 2360 2004-04	Non-conductive coatings on non-magnetic electrically conductive basis materials - Measurement of coating thickness - Amplitude-sensitive eddy current method
DIN EN ISO 2808 2007-05	Paints and varnishes - Determination of film thickness (here: <i>only method 6A, 7C, 7D</i>)

1.3 Determination of permeability *

DIN EN ISO 7783 2012-02	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

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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

DIN EN ISO 11998
2006-10 Paints and varnishes - Determination of wet-scrub resistance and cleanability of coatings

DIN EN 13300
2002-11 Paints and varnishes - Water-borne coating materials and coating systems for interior walls and ceilings - Classification

2.2 Tests of coating adhesion strength**

DIN EN ISO 2409
2013-06 Paints and varnishes - Cross-cut test

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

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

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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
FLTM BI 106-01 2017-05	Coating adhesion test
NES M 0007 2011-02	Testing method for automotive paint (here: <i>Item 29: Adhesion test method</i>)

2.3 Stone chip resistance **

DBL 5416 2017-08	Parts Manufactured from Thermoplastics for Paneling, Housings and Functional Parts for External Applications (here: <i>chapter 12.5: Multi-impact testing</i>)
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 2011-03	High performance stone chip resistance test new rating scale
MBN 10494-5 2016-03	Varnish testing methods - Part 5: Technical-mechanical tests (here: <i>only chapter 5.2: Stone chip resistance</i>)
NES M 0007 2011-02	Testing method for automotive paint (here: <i>Item 28.5: Test with gravelometer method B</i>)
TL 52711 2015-03	Underbody panels - LWRT - floor coverings, shields, damping pans, engine encapsulation (here: <i>only chapter 6.7: Stone chip resistance</i>)

2.4 Steam jet test **

DBL 5416 2017-08	Parts Manufactured from Thermoplastics for Paneling, Housings and Functional Parts for External Applications (here: <i>only chapter 12.6: Pressure water jet test (Steam jet test)</i>)
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

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MBN 10494-5 2016-03	Varnish testing methods - Part 5: Technical-mechanical tests (here: <i>only chapter 5.3: Pressure water jet test</i>)
PV 1503 2008-05	Varnishing of metallic and non-metallic materials - Steam jet test
STD4234 2004-05	Paints and varnishes - Determination of adhesion when subjected to high-pressure spraying with water
VCS 1029/54719 2006-04	Paints and enamels - Adhesion, water spraying under high-pressure

3 Optical Tests

3.1 Colorimetry **

AA-0161 2011-07	Color measurement on car bodies and attachment parts
AA-0354 2016-02	Technical understanding of color measurement and metrological approval of basic approvals and charge tables
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 ISO 18314-1 2017-04	Analytical colorimetry - Part 1: Practical colour measurement
DIN ISO 18314-2 2017-04	Analytical colorimetry - Part 2: Saunderson correction, solutions of the Kubelka-Munk equation, tinting strength, hiding power
DIN ISO 18314-3 2017-04	Analytical colorimetry - Part 3: Special indices
VdL-RL 09 2002-07	Guidance document on the determination of hiding power

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3.2 Determination of gloss values *

DIN EN ISO 2813 2015-02	Paints and varnishes - Determination of gloss value at 20°, 60° and 85°
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3.3 Visual evaluation procedures *

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
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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
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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
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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
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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
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DIN EN ISO 4628-8 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 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
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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

4 Tests of chemical resistance **

AA-0053 2010-04	Resistance of varnished surfaces in the interior to sunscreen
AA-0055 2017-01	Resistance testing of surfaces against chemicals
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 2007-05	Paints and varnishes - Determination of resistance to liquids - Part 2: Water immersion method
DIN EN ISO 2812-3 2012-10	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 2007-05	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
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 - Chemical resistance of automotive final coat - Gradient oven method
PV 3964 2008-02	Surfaces inside the vehicle - Checking the cream's resistance
VCS 1026,81779 2012-11	Paints and enamels - Chemical resistance

5 Environmental testing

5.1 Weathering tests **

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	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 4892-3 2016-10	Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps
DIN EN ISO 16474-2 2014-03	Paints and varnishes - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps
DIN EN ISO 16474-3 2014-03	Paints and varnishes - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps
DIN EN 927-6 2006-10	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
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)

5.2 Condensation test **

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 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)
DIN EN ISO 6988 1997-03	Metallic and other non-organic coatings - Sulfur dioxide test with general condensation of moisture
ISO 11503 1995-07	Paints and varnishes - Determination of resistance to humidity (intermittent condensation)

5.3 Corrosion tests **

ASTM B 117 2016	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM G 85 2011	Standard Practice for Modified Salt Spray (Fog) Testing
DIN EN ISO 9227 2017-07	Corrosion tests in artificial atmospheres - Salt spray tests
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

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PV 1208 2016-02	Recuperator off 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
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: <i>Chapter 12.7: Alternating climate test</i>)
DBS 918 020 2013-03	Labeling of rail vehicles - Self-adhesive films for external lettering and advertising (here: <i>Item 6.2.3: Temperature resistance</i>)
DBS 918 021 2015-07	Labeling of rail vehicles - Self-adhesive films for interior lettering (here: <i>Item 5.2.4: Adhesion due to temperature and thermal shock resistance</i>)
DIN EN ISO 4623-1 2002-06	Paints and varnishes - Determination of resistance to filiform corrosion - Part 1: Steel substrate
DIN EN ISO 4623-2 2016-12	Paints and varnishes - Determination of resistance to filiform corrosion - Part 2: Aluminium substrates
DIN EN 3665 1997-08	Aerospace series - Test methods for paints and varnishes - Filiform corrosion resistance test on aluminium alloys
PR 303.5 2010-01	Climate change test for equipment parts

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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
STD4445 2014-08	Accelerated corrosion test, version II (ACT2)
TL 226 2016-10	Paint finishes on automotive interior materials - Requirements (here: <i>Section 3.7, Table 3, No. 5.3: Hydrolysis storage</i>)
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 test and tensile tests **

DIN EN ISO 178 2013-09	Plastics - Determination of flexural properties
DIN EN ISO 527-1 2012-06	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 2003-07	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
DIN EN 1464 2010-06	Adhesives - Determination of peel resistance of adhesive bonds - Floating roller method

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MBN 10526 2017-10	Test methods for self-adhesive components (here: <i>Chapter 6.3: Peele resistance</i>)
TL 239 2012-11	Surface protection alloy wheels - Requirements (here: <i>Section 3.5, Table 3, No. 5: Adhesion of balancing weights</i>)

abbreviations used:

AA	Standard Procedure of BMW AG
ASTM	American Society for Testing and Materials
BMW	Bayerische Motorenwerke AG
CETP	Corporate Engineering Test Procedure
DBL	Daimler Benz delivery instruction
DBS	Deutsche Bahn-Standard
DIN	German Institute for Standardization
EN	European Standard
FLTM	Ford Laboratory Test Method
ISO	International Organization for Standardization
MBN	Mercedes Benz standard
NES	Nissan Engineering Standard
PR	Test specification of BMW AG
PV	Test specification of VW AG
RL	Guidance Document
STD	Scania Standard
TL	Volkswagen technical delivery specification
VCS	Volvo-Car-Corporation Standard
VDA	German Association of the Automotive Industry
VdL	German Paint and Printing Ink Association
VW	Volkswagen AG