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 Magdeburg GmbH
Fichtestraße 29, 39112 Magdeburg

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

characterisation of physical, mechanical and optical properties of coatings;
determination of resistance of coatings to liquids (chemical resistance tests);
environmental simulation tests on coatings, plastics, metallic materials, with or without corrosion protection and textiles (weathering tests, water condensation tests, corrosion tests, temperature and climate tests);
flexural tests, tensile tests and impact tests on plastics, rubber, adhesive bonds, textiles and metallic materials;
determination of burning behaviour of interior materials in motor vehicles (burning tests);
testing and assessing the ease of decontamination of radioactively contaminated surfaces;
chemical analysis on coating materials, plastics and other organic materials;
analysis of emissions from vehicle interior parts and materials, building products and furnishing

The accreditation certificate shall only apply in connection with the notice of accreditation of 09.07.2021 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 27 pages.

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

Frankfurt am Main, 09.07.2021	Dipl.-Ing. (FH) Ralf Egner Head of Division	Translation issued: 12.08.2021	Head of Division

The certificate together with the annex reflects the status as indicated by the date of issue.
The current status of any given scope of accreditation may be found respectively 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.

Deutsche Akkreditierungsstelle GmbH

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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: **09.07.2021**

Date of issue: 08.02.2022

Holder of certificate:

iLF Magdeburg GmbH
Fichtestraße 29, 39112 Magdeburg

Tests in the fields:

characterisation of physical, mechanical and optical properties of coatings;
determination of resistance of coatings to liquids (chemical resistance tests);
environmental simulation tests on coatings, plastics, metallic materials, with or without corrosion protection and textiles (weathering tests, water condensation tests, corrosion tests, temperature and climate tests);
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chemical analysis on coating materials, plastics and other organic materials;
analysis of emissions from vehicle interior parts and materials, building products and furnishing

The management system requirements in DIN EN ISO/IEC 17025 are written in language relevant to operations of testing laboratories and operate generally in accordance with the principles of DIN EN ISO 9001.

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

Abbreviations used: see Page 26/27

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. (flexible scope Category I)

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. (flexible scope Category III)**

The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

1 Physical tests

1.1 Drying tests *** (flexible scope Category III)

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 film thickness

1.2.1 Measurement of coating thickness by optical method * (flexible scope Category I)

DIN EN ISO 1463 2004-08	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method
DIN EN ISO 2808 2019-12	Paints and varnishes - Determination of film thickness (here: *Method 6A - Cross-sectioning*)

1.2.2 Measurement of coating thickness by magnetic method * (flexible scope Category I)

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: *Method 7B.2 - Magnetic field change, magnetic-induction principle and Method 7C - Eddy-current gauge*)

1.2.3 Measurement of coating thickness of metallic coatings by coulometric method * (flexible scope Category I)

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 2009-12	Metallic and other inorganic coatings - Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium (here: *Annex E - Step test method*)
DIN EN ISO 2177 2004-08	Metallic coatings - Measurement of coating thickness - Coulometric method by anodic dissolution
ASTM B 764 2004	Standard Test Method for Simultaneous Thickness and Electrode Potential Determination of Individual Layers in Multilayer Nickel Deposit (STEP Test)

1.2.4 Determination of cracks and pores by copper deposition method * (flexible scope Category I)

DIN 53100 2020-04	Metallic coatings - Electroplated coatings of nickel plus chromium and of copper plus nickel plus chromium on plastics materials (here: *Annex C - Determination of cracks and pores in chromium coatings*)
DIN EN ISO 1456 2009-12	Metallic and other inorganic coatings - Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium (here: *Annex A - Determination of cracks and pores in chromium coatings*)

1.3 Permeability tests *** (flexible scope Category III)

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
DIN EN ISO 7783 2019-02	Paints and varnishes - Determination of water-vapour transmission properties - Cup method

2 Mechanical tests

2.1 Determination of mechanical-technological properties *** (flexible scope Category III)

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

2.2 Adhesion tests

2.2.1 Pull-off test for assessment of the adhesion of coatings * (flexible scope Category I)

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 for assessment of the adhesion of coatings * (flexible scope Category I)

DIN EN ISO 2409 2020-12	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

2.3 Stone-chipping tests *** (flexible scope Category III)

DIN EN ISO 20567-1 2017-07	Paints and varnishes - Determination of stone-chip resistance of coatings - Part 1: Multi-impact testing

2.4 Steam-jetting tests *** (flexible scope Category III)

DIN EN ISO 16925 2014-06	Paints and varnishes - Determination of the resistance of coatings to pressure water-jetting

2.5 Abrasion and scratch tests

2.5.1 Determination of wet-scrub resistance *** (flexible scope Category III)

DIN EN 13300 2002-11	Paints and varnishes - Water-borne coating materials and coating systems for interior walls and ceilings - Classification
DIN EN ISO 11998 2006-10	Paints and varnishes - Determination of wet-scrub resistance and cleanability of coatings

2.5.2 Abrasion tests using the ABREX® test rig *** (flexible scope Category III)

DIN EN 60068-2-70 1996-07	Environmental testing - Part 2: Tests - Test Xb: Abrasion of markings and letterings caused by rubbing of fingers and hands

2.5.3 Scratch tests on coatings using scratch hardness testers and spring-loaded pens * (flexible scope Category I)

DIN EN ISO 1518-1 2019-10	Paints and varnishes - Determination of scratch resistance - Part 1: Constant-loading method
DIN EN ISO 22557 2021-02	Paints and varnishes - Scratch test using a spring-loaded pen

2.5.4 Scratch tests on coatings using a crockmeter * (flexible scope Category I)

DIN EN ISO 105-X12 2016-11	Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing
DIN EN ISO 21546 2021-02	Paints and varnishes - Determination of the resistance to rubbing using a linear abrasion tester (crockmeter)

3 Optical tests

3.1 Evaluation of colour coordinates of coatings by colour measurement * (flexible scope Category I)

DIN 6167 1980-01	Description of yellowness of near-white or near-colourless materials
DIN EN ISO 6504-3 2020-04	Paints and varnishes - Determination of hiding power - Part 3: Determination of hiding power of paints for masonry, concrete and interior use
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
DIN EN ISO/CIE 11664-4 2020-03	Colorimetry - Part 4: CIE 1976 L*a*b* colour space

3.2 Determination of gloss value *** (flexible scope Category III)

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

3.3 Visual evaluation of textiles and coatings * (flexible scope Category I)

DIN EN 20105-A02 1994-10	Textiles - Tests for colour fastness - Part A02: Grey scale for assessing change in colour
DIN EN ISO 105-A03 2020-02	Textiles - Tests for colour fastness - Part A03: Grey scale for assessing staining
DIN EN ISO 3668 2020-05	Paints and varnishes - Visual comparison of 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
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

4 Determination of resistance of coatings to liquids by chemical resistance tests * (flexible scope Category I)

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

5 Environmental simulation tests

5.1 Weathering tests

5.1.1 Methods of exposure of textiles, plastics and coatings to xenon arc lamps * (flexible scope Category I)

DIN EN ISO 105-B02 2014-11	Textiles - Tests for colour fastness - Part B02: Colour fastness to artificial light: Xenon arc fading lamp test

DIN EN ISO 105-B06 2020-12	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
SAE J 2527 2017-09	Performance Based Standard for Accelerated Exposure of Automotive Exterior Materials Using a Controlled Irradiance Xenon-Arc Apparatus

5.1.2 Methods of exposure of plastics and coatings to fluorescent UV lamps * (flexible scope Category I)

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 2021-04	Paints and varnishes - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps

5.2 Water condensation tests

5.2.1 Condensation exposure for determination of resistance of coatings to humidity * (flexible scope Category I)

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)

5.2.2 Condensation exposure for determination of resistance of coatings to humid atmospheres containing sulfur dioxide * (flexible scope Category I)

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

5.3 Corrosion tests

5.3.1 Salt spray tests for assessment of the corrosion resistance of metallic materials, with or without corrosion protection * (flexible scope Category I)

DIN EN ISO 9227 2017-07	Corrosion tests in artificial atmospheres - Salt spray tests
ASTM B 117 2019	Standard Practice for Operating Salt Spray (Fog) Apparatus

5.3.2 Corrosion cycle tests for determination of resistance of coatings to cyclic corrosion conditions * (flexible scope Category I)

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
ASTM G 85 2019	Standard Practice for Modified Salt Spray (Fog) Testing

5.4 Temperature and climate tests for determination of resistance of coatings * (flexible scope Category I)

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

6 Flexural tests, tensile tests and impact tests

6.1 Determination of flexural properties of plastics by flexural tests * (flexible scope Category I)

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 flexure*)

6.2 Determination of tensile properties of rubber, adhesive bonds, textiles, plastics and metallic materials by tensile tests * (flexible scope Category I)

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

6.3 Determination of impact properties of plastics by impact tests * (flexible scope Category I)

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 Determination of burning behaviour of interior materials in motor vehicles by burning tests * (flexible scope Category I)

DIN 75200 1980-09	Determination of burning behaviour of interior materials in motor vehicles
ISO 3795 1989-10	Road vehicles, and tractors and machinery for agriculture and forestry - Determination of burning behaviour of interior materials

8 Testing and assessing the ease of decontamination of radioactively contaminated surfaces * (flexible scope Category I)

DIN 25415 2012-11	Radioactively contaminated surfaces - Method for testing and assessing the ease of decontamination
ISO 8690 2020-08	Measurement of radioactivity - Gamma ray and beta emitting radionuclides - Test method to assess the ease of decontamination of surface materials

9 Chemical material analysis

9.1 Methods for physical-chemical analysis *** (flexible scope Category III)

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 Determination of volatile organic compounds content in plastics and coating materials by gas-chromatography * (flexible scope Category I)

DIN EN 13130-4 2004-08	Materials and articles in contact with foodstuffs - Plastics substances subject to limitation - Part 4: Determination of 1,3-butadiene in plastics
DIN EN ISO 11890-2 2020-12	Paints and varnishes - Determination of volatile organic compounds (VOC) and/or semi volatile organic compounds (SVOC) 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 *** (flexible scope Category III)

DIN EN 1767 1999-09	Products and systems for the protection and repair of concrete structures - Test methods - Infrared analysis
DIN 51453 2004-10	Testing of lubricants - Determination of oxidation and nitration of used motor oils - Infrared spectrometric method

9.4 Determination of formaldehyde concentration

VdL-RL 03 2018-02	Guideline for the determination of the formaldehyde concentration in water-dilutable paints and varnishes, and polymer dispersions (here: *Acetylacetone method for determining the free in-can formaldehyde concentration*)

10 Analysis of emissions

10.1 Determination of the fogging characteristics of trim materials in the interior of automobiles using a fogging device * (flexible scope Category I)

DIN 75201 2011-11	Determination of the fogging characteristics of trim materials in the interior of automobiles
ISO 6452 2021-05	Rubber- or plastics-coated fabrics - Determination of fogging characteristics of trim materials in the interior of automobiles
SAE J 1756 2006-08	Determination of the Fogging Characteristics of Interior Automotive Materials

10.2 Determination of the odour characteristics *** (flexible scope Category III)

SAE J 1351 2015-07	Hot Odor Test for Insulation Materials
VDA 270 2018-06	Determination of the odour characteristics of trim materials in motor vehicles

10.3 Determination of aldehyde and ketone emissions *** (flexible scope Category III)

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
VDI 3862 Blatt 3 2000-12	Gaseous emission measurement - Measurement of aliphatic and aromatic aldehydes and ketones by DNPH method - Cartridges method
VDA 275 1994-07	Moulded composites and fleeces for vehicles - Determination of formaldehyde release - Test procedure called modified flask method

10.4 Determination of the emission of volatile organic compounds from vehicle interior parts and materials, building products and furnishing using the test chamber method * (flexible scope Category I)

DIN ISO 12219-4 2013-12	Interior air of road vehicles - Part 4: Method for the determination of the emissions of volatile organic compounds from vehicle interior parts and materials - Small chamber method
DIN EN ISO 16000-9 2008-04	Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method
VDA 276 2005-12	Determination of organic substances as emitted from automotive interior products using a 1 m³ test cabinet (deviation: *0,25 m^3 test chamber*)

10.5 Determination of volatile organic compounds and phthalates with gas chromatography/mass spectrometry * (flexible scope Category I)

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
DIN ISO 16000-33 2017-12	Indoor air - Part 33: Determination of phthalates with gas chromatography/mass spectrometry (GC/MS)

10.6 Determination of emission of organic compounds *** (flexible scope Category III)

VDA 277 1995-01	Non-metallic materials in automotive interior trim - Determination of emission of organic compounds

10.7 Thermal desorption analysis of organic emissions *** (flexible scope Category III)

VDA 278 2016-05	Thermal Desorption Analysis of Organic Emissions for the Characterization of Non-Metallic Materials for Automobiles

11 Testing according to company standards

11.1 Deutsche Bahn

DBS 918 020 2013-03	Labelling of railway vehicles - Self-adhesive films for exterior lettering and outdoor advertising (here: *Section 6.2.3 - Temperature resistance*)
DBS 918 021 2015-07	Labelling of railway vehicles - Self-adhesive films for interior lettering (here: *Section 5.2.4 - Adhesion by temperature resistance and resistance to thermal shock*)

11.2 Daimler

DBL 5307 2019-07	Flame retardant properties - Interior trim parts - Requirements and test specifications
DBL 5416 2017-08	Parts manufactured from Thermoplastics for Paneling, Housings and Functional Parts for External Applications (here: *Section 12.4 - Cross cut with adhesive tape application and removal - based on DIN EN ISO 2409,* *Section 12.5 - Multi-impact test - based on DIN EN ISO 20567-1,* *Section 12.6 - Pressure water-jetting test (Steam-jetting test) - according to DIN EN ISO 16925,* *Section 12.7 - Thermal cycle test,* *Annex A.2, Table 23, Test no. A.2.8 - Hot-water test - based on DIN EN ISO 2812-2*)
DBL 5425 2020-07	Coating / Paintwork of Plastic Parts in the Vehicle Exterior (here: *Section 8.3 - Artificial weathering - according to DIN EN ISO 4892-2,* *Section 8.4 - Process material and chemical resistance - based on MBN 10494-7,* *Section 8.5 - Cross cut with adhesive tape application and removal - based on DIN EN ISO 2409,* *Section 8.6 - Multi-impact test - based on DIN EN ISO 20567-1,* *Section 8.7 - Pressure water-jetting test (steam-jetting test) - according to DIN EN ISO 16925,* *Section 8.8 - Cyclic climate test,* *Annex A.1, Tables 5 to 15, A.1.6 - Hot-water test - based on DIN EN ISO 2812-2*)

DBL 5555 2014-04	Finished Parts and Semi-Finished Products Made of Organic Polymer Materials - General Conditions and Test Methods (here: *Section 23.2 - Artificial weathering - according to DIN EN ISO 4892-2*)
MBN 10494-4 2021-02	Paint Test Methods - Part 4: Optical Tests (here: *Section 5.1.1 - Gloss measurement on high-gloss paint surfaces - according to DIN EN ISO 2813,* *Section 5.1.2 - Gloss measurement on low-gloss paint surfaces,* *Section 5.2.1 - Visual color assessment - according to MBN 10476,* *Section 5.2.2 – Colorimetry - according to MBN 10473-1*)
MBN 10494-5 2021-03	Paint Test Methods - Part 5: Technical-Mechanical Tests (here: *Section 5.2.1 - Manual scratch test,* *Section 5.3.1 - Multi-impact test, method B - based on DIN EN ISO 20567-1,* *Section 5.3.2 - Multi-impact test, method C - based on DIN EN ISO 20567-1,* *Section 5.4 - Pressure-water jetting test - based on DIN EN ISO 16925,* *Section 5.5 - Cross-cut - based on DIN EN ISO 2409*)

MBN 10494-6 2021-03	Paint Test Methods - Part 6: Climatic Tests (here: *Section 5.2 - Condensed water constant atmosphere, CH - based on DIN EN ISO 6270-2,* *Section 5.3 - Salt spray test, NSS - based on DIN EN ISO 9227,* *Section 5.4 - CASS test - based on DIN EN ISO 9227,* *Section 5.5.1 - Corrosion cycle test 1, KWT 1 - based on DIN EN ISO 11997-1,* *Section 5.6 - Filiform test on painted aluminium parts as per Daimler - based on DIN EN ISO 4623-2,* *Section 5.9.1 - SAE J 2527 (CAM 180) - based on DIN EN ISO 16474-2 and SAE J 2527,* *Section 5.9.2 - QUV - according to ASTM G 154,* *Section 5.9.3 - Hot light aging - according to DIN EN ISO 105-B06,* *Section 7.1 - Blistering/degree of blistering, S - according to DIN EN ISO 4628-2,* *Section 7.2 - Surface corrosion, Ri - according to DIN EN ISO 4628-3,* *Section 7.3 - Flange corrosion, FR,* *Section 7.4 - Cross-cut, Gt - according to MBN 10494-5 (based on DIN EN ISO 2409),* *Section 7.5 - Edge corrosion, KR - according to DIN EN ISO 4628-1,* *Section 7.6 - Scratch test, K - according to MBN 10494-5,* *Section 7.7 - Longest filiform thread on scribe with filiform corrosion, IF,* *Section 7.8 - Weld seam corrosion, SR,* *Section 7.9 - Sub-surface corrosion at scribe, U/2 - based on DIN EN ISO 4628-8*)
MBN 10494-7 2016-03	Paint Test Methods - Part 7: Resistance to Chemicals, Test Mixtures and Test Concentrates
MBN 10494-8 2016-03	Paint Test Methods - Part 8: Adhesion of Adhesives on the Coating (here: *Section 5.5 - Balance weight adhesion to light-alloy wheel surfaces*)
MBN 10526 2018-07	Test Methods for Self-Adhesive Components (here: *Section 6.3 - Peeling resistance*)
MBN 55555-5 2018-08	Non-metallic materials, material systems and semi-finished products - Part 5: Weathering Tests (here: *Section 5.4 - Artificial weathering in a humid or dry-hot climate - according to DIN EN ISO 4892-2*)

11.3 Volkswagen

TL 211 2019-11	Coating of Plastic Exterior Parts; Requirements (here: *Section 6, Table 1, No. 4.2 - Heat aging in a forced-air oven*)
TL 212 2016-12	Oxide Coatings on Aluminum Parts; Surface Protection Requirements (here: *Section 3.7 - Thermal stability*)
TL 226 2020-10	Paintwork on Materials of Vehicle Interior Equipment; Requirements (here: *Section 3.6, Table 2,* *No. 4.1 - Heat resistance in a drying oven,* *No. 5.3 - Hydrolysis aging*)
TL 239 2019-07	Alloy Wheels; Surface Protection Requirements (here: *Section 3.5, Table 3, No. 5 - Adhesion of wheel weights*)
TL 1010 2008-01	Materials for Vehicle Interiors; Burning Behavior, Material Requirements - *according to DIN 75200*
TL 52711 2021-03	Underbody Applications; Engine Encapsulations, Transmission Encapsulations, and c_d- Enhancing Underbody Panels Made of LWRT (here: *Section 6.6 - Bending stiffness - based on DIN EN ISO 178,* *Section 6.7 - Stone-chip resistance - based on DIN EN ISO 20567-1*)
PV 4.6.3 2009-10	Paints and Varnishes; Resistance to Chemicals of Automotive Top Coats, Gradient Oven Method
PV 1058 2020-03	Chrome-Plated Surfaces; Determination of the Micro-Crack Pattern on Chrome-Plated Surfaces - *according to DIN 53100*
PV 1063 2018-11	Chrome-Plated Surfaces; Determining the Micropore Density
PV 1065 2013-04	Chrome-Plated Surfaces; Determination of Potential Differences and Layer Thicknesses of Nickel Coatings - *according to DIN EN ISO 2177*
PV 1078 2019-11	Subframe ASSY and Chassis Parts in Steel Construction; Intensified Corrosion and Temperature Cycle Test (VKTT)
PV 1200 2019-10	Vehicle Parts; Testing the Environmental Cycle Resistance (80 °C/ -40 °C)
PV 1207 2018-10	Aluminum Add-on Parts; Corrosion Test (Environmental Corrosion Cycle Test)

PV 1208 2016-02	Heat Exchangers Made of Aluminum Alloys; Corrosion Test (SWAAT)
PV 1209 2016-02	Add-On Parts/Hang-On Parts with a Zinc or Zinc Alloy Coating and Aluminum Add-On Parts/Hang-On Parts (e.g., Heat Exchanger, Refrigerant Line); Corrosion Test (Environmental Corrosion Cycle Test)
PV 1210 2016-02	Body and Add-On Parts/Hang-On Parts; Corrosion Test
PV 1303 2021-05	Non-Metallic Materials; Xenon Arc Light Aging of Vehicle Interior Parts - *according to DIN EN ISO 105-B06*
PV 1306 2008-02	Non-Metallic Materials; Exposure Test for Determining the Tackiness of Polypropylene Parts
PV 1502 2016-11	Clear Coat for Dual-Layer Metallic Paint Coatings; Testing for Resistance to Cracking
PV 2005 2000-09	Vehicle Parts; Testing of Resistance to Environmental Cycle Test
PV 2034 2020-09	Non-Metallic Planar Materials; Floating Roller Peel Test
PV 3015 2019-03	Fogging Behavior of Materials Used in the Vehicle Interior; Gravimetric Determination of Condensable Components - *according to DIN 75201*
PV 3341 1995-03	Non-Metallic Materials in Automotive Interior Trim; Determination of Emission of Organic Compounds
PV 3357 2019-04	Sound Insulation Materials; Behavior on Flame Exposure with a Burner; Surface and Edge Flame Exposure Test
PV 3900 2019-04	Vehicle Interior Components; Odor Test
PV 3905 2015-04	Organic Materials; Ball Drop Test
PV 3906 2018-12	Non-Metallic Planar Materials; Testing the Abrasion Behavior - *according to DIN EN ISO 105-X12*

PV 3919 2010-01	Nonwoven Fabric Sound Insulation; Determining Compression Stress
PV 3925 2021-01	Polymer Materials; Determination of Emissions of Formaldehyde; Test Procedure called modified Flask Method
PV 3929 2021-04	Non-Metallic Materials; Weathering in Dry, Hot Climate (Exterior) - *according to DIN EN ISO 4892-2/DIN EN ISO 16474-2*
PV 3930 2017-11	Non-Metallic Materials; Weathering in Humid, Hot Climate (Exterior) - *according to DIN EN ISO 4892-2/DIN EN ISO 16474-2*
PV 3942 2016-08	Emission Behavior of Parts, Components, and Semi-Finished Products for the Vehicle Interior; Testing Using the DUT Chamber Method (deviation: *0,25 m^3 test chamber*)
PV 3952 2020-04	Plastic Components for the Vehicle Interior; Scratch Resistance Test
PV 3954 2009-07	Floor Covering ASSYs; Determining Bending Stiffness
PV 3964 2008-02	Surfaces in the Passenger Compartment; Testing of Cream Resistance
PV 3965 2006-04	Decorative Surfaces on and in the Vehicle; Visual Color Matching according to DIN EN ISO 3668
PV 3966 2016-12	PP Components; Stress Whitening Properties (Ball Drop Test)
PV 3973 2010-11	Elastomer O-Rings; Determining Tensile Strength, Elongation at Tear and Stress Values in the Tensile Test
PV 3974 2020-06	Plastic Components; Determination of the Mar Resistance of Surfaces without Finish Treatment in Vehicle Interiors And Exteriors
PV 3987 2016-11	Scrub Resistance (Micro-Scratch Resistance) of High-Gloss Surfaces in the Vehicle Interior - *according to DIN EN ISO 105-X12*
PV 7201 2019-06	Alloy Wheel; Testing of Filiform Corrosion Properties

VW 50190 2017-11	Vehicle Interior Equipment Components; Measurement-Based Evaluation of Color and Gloss Level; Visual Evaluation of Chrome Surfaces - *according to DIN EN ISO 11664-4, DIN EN ISO 2813 and PV 3965 (according to DIN EN ISO 3668)*
VW 96379 2006-04	Exterior; Testing of Add-on Parts; Climatic Test
VW 96380 2015-07	Corrosion Test; Modified Environmental Cycle Test
VW 96424 2017-04	Interior; Emission behaviour - Thermal desorption analysis based on VDA 278

11.4 BMW

AA-0053 2017-04	Sun cream resistance of painted parts in the interior
AA-0055 2018-05	Chemical resistance test of surfaces
AA-0061 2018-09	Formaldehyde emission from nonmetallic materials and components, determined by HPLC
AA-0079 2018-02	Determination of multi impact stone chip resistance - *according to DIN EN ISO 20567-1*
AA-0101 2018-02	Reflectometer Value (Gloss) - *according to DIN EN ISO 2813*
AA-0161 2018-04	Color Measurement on Bodies and Hang On Parts
AA-0180 2018-11	Cross hatch testing - *based on DIN EN ISO 2409*
AA-0326 2017-12	SCAB Corrosion Test
AA-0354 2020-01	Technical Understanding of Color Measurement and the Measurement of Test Panels for Initial and Batch Release

GS 97014-3 2014-04	Emissions measurement with air exchange in a testing chamber; Determination of volatile, organic emissions from components, semi-finished products and materials - *based on DIN ISO 12219-4*
GS 97014-4 2012-11	Emissions measurement with air exchange in a testing chamber; Determination of the olfactory behavior - *according to VDA 270*
GS 97038 2020-02	Determination of burning behavior to automotive interior trim materials - *according to DIN 75200*
PR 303.6 2020-06	Alternating climate test for trim parts
PR 557 2020-05	Resistance of unpainted thermoplastic surfaces in interior and exterior area to media

11.5 MAN

MAN 277 2019-03	Coatings - Adhesion test (scratch test)

11.6 Volvo

Volvo STD 420-0003 2014-06	Organic materials - Fogging
VCS 1026,81779 2012-11	Paints and enamels - Chemical resistance
VCS 1027,1449 2014-02	Cyclic atmospheric corrosion test with salt load - Accelerated corrosion test, version II - ACT II
VCS 1027,2729 2016-11	Organic materials - Odour of trim materials in vehicles
VCS 1027,2739 2004-03	Determination of formaldehyde emission from components in vehicle interiors
VCS 1027,2749 2004-03	Determination of organic emission from non-metallic materials in vehicle interiors
VCS 1029,54719 2006-04	Paints and enamels - Adhesion, water spraying under high-pressure

11.7 Scania

STD4234 2004-05	Paints and varnishes - Determination of adhesion when subjected to high-pressure spraying with water
STD4445 2014-08	Accelerated corrosion test, version II (ACT2)

11.8 Renault

Renault D40 3004 / - - A 2011-07	Analysis of formaldehyde and other carbonyl compounds
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)
Renault D49 3001 / - - E 2015-01	Odour emissions, internal equipment parts - Intensity evaluation and global odour characterization

11.9 PSA

PSA D10 5495	Test for interior materials vehicle - Evaluation of the amount of volatile organic compounds (VOCs) by thermodesorptions/GS/MS
PSA D27 1389 2007-07	Paint coatings - Rubbers and plastics - Artificial ageing by Weather-Ometer

11.10 General Motors

GMW3205 2016-08	Test method for determining the resistance to odor propagation of interior materials
GMW3235 2016-08	Fogging characteristics of trim materials
GMW15635 2020-02	Determination of aldehyde and ketone emissions from interior materials

11.11 Ford

FLTM BI 104-01 2003-01	Water immersion test for painted parts and panels
FLTM BI 106-01 2017-05	Coating adhesion test
FLTM BI 157-06 2019-01	High performance stone chip resistance test new rating scale
FLTM BO 131-03 2017-05	Interior odor test
FLTM BO 160-04 2018-02	Resistance of painted plastic parts to high pressure cleaning operations
FLTM BZ 156-01 2011-07	Determination of formaldehyde, aldehyde, and ketone emissions from non-metallic components, parts and materials in the vehicle interior
FLTM BZ 157-01 2011-03	Determination of organic emissions from non-metallic materials in vehicle interiors by Headspace Gas Chromatography

11.12 Toyota

BSDM0500 2020-12	Flammability test method for interior materials
BSDM0503 2021-05	Fogging test method for non-metallic materials (here: *Method B*)
BSDM0505 2019-09	Smell quality of non-metallic materials
TSM0503G 2019-04	Fogging test method for non-metallic materials (here: *Method B*)
TSM0505G 2019-02	Smell quality of non-metallic materials

11.13 Jaguar Land Rover

TPJLR.52.458 2014-05	Determination and assessment of odour from interior trim materials, components and assemblies
TPJLR.52.561 2009-11	Resistance of painted exterior parts to high pressure cleaning operations

11.14 Hyundai · Kia

MS 300-34 2002-10	Test method of odor for interior parts

11.15 Nissan

NES M 0007 2014-04	Testing method for automotive paint (here: *Item 28.5 - Test with gravelometer method B,* *Item 29 - Adhesion test method*)

11.16 Other

CETP 00.00-L-467 2009-03	Global laboratory accelerated cyclic corrosion test

abbreviations used:

AA	BMW Work Instruction
ASTM	American Society for Testing and Materials
BMW	Bayerische Motorenwerke
CETP	Corporate Engineering Test Procedure
DBL	Mercedes-Benz Company 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 Company Standard
MS	Hyundai · Kia Motor Material Specification

NES	Nissan Engineering Standard
PR	BMW Test Specification
PSA	Peugeot Société Anonyme
PV	VW Group Standard
RL	Guideline
SAE	Society of Automotive Engineers
STD	Scania Standard
TL	VW Group Standard
TPJLR	Jaguar Cars & Land Rover - Engineering Test Procedure
VCS	Volvo Car Corporation Standard
VDA	German Association of the Automotive Industry
VdL	German Paint and Printing Ink Association
VW	Volkswagen