

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-11282-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: **11.04.2022**

Date of issue: 09.02.2023

Holder of certificate:

**Institut für Galvano- und Oberflächentechnik Solingen GmbH & Co. KG (IGOS)
Grünwalder Straße 29-31, 42657 Solingen**

Tests in the fields:

**Determination of resistance to corrosion and medium of components by environmental simulations;
mechanic-technological testing; physical-chemical testing**

Within the given testing field marked with *, the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the free choice of standard or equivalent testing methods. The listed testing methods are exemplary. The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

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.

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

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 can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de/en/content/accredited-bodies-dakks>.

Abbreviations used: see last page

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

1 Determination of resistance to corrosion and medium of components by environmental simulations according to standards *

AS 2345 2006	Dezincification resistance of copper alloys
ASTM B 117 2019	Standard Practice for Operating Salt Spray (Fog)
ASTM B 368 2021	Standard Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test)
ASTM G 85 2019	Standard Practice for Modified Salt Spray (Fog) (here: <i>Annex 1, Acetic Acid-Salt Spray (Fog) Testing</i> <i>Annex 3, Acidified Synthetic Sea Water (Fog) Testing (SWAAT)</i>)
DIN 8237 1982-10	Gold alloy coverings on watch cases; requirements, testing and marking (<i>withdrawn standard</i>)
DIN 50014 2018-08	Standard atmospheres for conditioning and/or testing - Specifications
DIN 50018 2013-05	Testing in a saturated atmosphere in the presence of sulfur dioxide
DIN 55635 2019-05	Paints and varnishes - Cyclic corrosion testing of coating systems on materials and components in automotive construction
DIN 50958 2012-12	Electroplated coatings - Modified corrodokote corrosion test (mod. CORR-Test)
DIN EN 248 2003-01 + Berichtigung 1 2017-05	Sanitary tapware - General specification for electrodeposited coatings of Ni-Cr
DIN EN 13523-27 2017-06	Coil coated metals - Test methods - Part 27: Resistance to humid poultice (Cataplast test)
DIN EN ISO 2143 2018-09	Anodizing of aluminium and its alloys - Estimation of loss of absorptive power of anodic oxidation coatings after sealing - Dye-spot test with prior acid treatment

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DIN EN 60068-2-11 2000-02	Environmental testing - Part 2: Tests - test Ka: Salt mist
DIN EN 60068-2-30 2006-06	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)
DIN EN 60068-2-38 2010-06	Environmental testing - Part 2-38: Tests - Test Z/AD: Composite temperature/humidity cyclic test (here: <i>without Chapter 6.5</i>)
DIN EN 60068-2-52 2018-08 + Berichtigung 1 2019-02	Environmental testing - Part 2-52: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)
DIN EN ISO 4541 1995-01	Metallic and other non-organic coatings - Corrodokote corrosion test (CORR test)
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 4628-8 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

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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 6509-1 2014-09	Corrosion of metals and alloys - Determination of dezincification resistance of copper alloys with zinc - Part 1: Test method
DIN EN ISO 6988 1997-03	Metallic and other non-organic coatings - Sulfur dioxide test with general condensation of moisture
DIN EN ISO 9227 2017-07	Corrosion tests in artificial atmospheres - Salt spray tests
DIN EN ISO 10289 2001-04	Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates - Rating of test specimens and manufactured articles subjected to corrosion 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 (here: <i>Cycle B, Annex B</i>)
DIN EN ISO 12944-6 2018-06	Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 6: Laboratory performance test methods (here: <i>without Annex B, cyclic ageing test, without testing according to ISO 6270-1, condensation of water, without testing according to ISO 4624, Paints and varnishes - Pull-off test for adhesion</i>)
DIN EN ISO 16701 2015-10	Corrosion of metals and alloys - Corrosion in artificial atmosphere - Accelerated corrosion test involving exposure under controlled conditions of humidity cycling and intermittent spraying of a salt solution
DIN EN ISO 17872 2019-12	Paints and varnishes - Guidelines for the introduction of scribe marks through coatings on metallic panels for corrosion testing

2 Determination of resistance to corrosion and medium of components by environmental simulations according to company standards

BMW AA 0055 2017-01	Chemical resistance test of surfaces <i>(here: Test method 1: stability of fuel, Test method 7: Resistance of anodized surfaces)</i>
BMW AA-0129 2010-04	Cass Testing (Copper chloride-acetic acid salt spray testing)
BMW AA-0213 2018-02	Condensation Water Constant Atmosphere Test
BMW AA-0224 2018-04	Cyclic Corrosion Test <i>(here: without clause 3.6.2 function test)</i>
BMW AA-0324 2018-04	Saltspray - Test <i>(here: without clause 3.6 function test of construction)</i>
BMW AA-0326 2017-12	SCAB corrosion test
BMW PR 209 2008-09	PR Function protection entance <i>(here: clause 3.5.1, Humidity Storage clause 3.5.2, Alternating climate test clause 3.5.4, Salt spray test)</i>
BMW PR 303.5 2010-01	Alternating climate test for equipment components
BMW PR 308.2 2006-04	Climatic testing of adhesive connections and of adhesive joints <i>(here: chapter 3, for climate testing)</i>
BMW QV 64005 2009-05	Corrosion resistance for cooling wires Clause 4.9, Corrosion resistance <i>(here: without chapter 4.9.1.3, Leak test)</i>
Bosch N42AP 102 1991-08	Climate test - Salt spray test
Bosch N42AP 226 2010-09	Climate test - Tigtended Life cycle – Corrosion testlebensdauer

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Daimler Chrysler PA PP PWT 3001 2013-07	Alternating climate test
Daimler Benz DBL 5425 2020-07	Beschichtung / Lackierung von Kunststoffteilen im Fahrzeug-Exterieur (here: <i>clause 8.5, Cross hatch with clause 8.6, Multi impact test clause 8.8, Alternating climate test annex A 1.3, Coating thickness annex A 1.4, Multi impact test with deck coated components annex A 1.5, Condensation water constant atmosphere annex A 1.6, Hot water test annex A 1.10, Alternating climate test annex A 1.14, Endurance behavior</i>)
Daimler Benz DBL 9201 2017-02	Aluminium components with anodic generated oxid coating (here: <i>clause 9.6, climate test / conditioning before testing clause 9.7, Resistance to chemicals, test mixtures and test concentrate</i>)
FIAT MS 50493-04 2011-01	Determination of the resistance organic coatings to the Propagation of Bubble under Skincorrosion (Scab In Door)
Ford CETP 00.00-L-467 2009-03	Global Laboratory Accelerated Cyclic Corrosion Test
GM Appendix F10 2006-11	Materials Engineering Requirements - Anodized Version Chapter 1.2.2 - Alkaline resistance pH 12,5 and pH 13,5 (here: <i>without Chapter f and g</i>)
GMW 14872 2018-10	Cyclic Corrosion Laboratory Test
MBN 10494-5 2021-03	Paint Test Methods - Part 5: Technical-Mechanical Tests (here: <i>clause 5.1.1, scratch sample clause 5.1.2, adhesion test with additional adhesive tape clause 5.2.1, Multi impact test method B clause 5.2.2, Multi impact test method C clause 5.4, Cross hatch clause 5.6.2, Mandrel bend tests with cylindric mandrel clause 5.10, Resistance to cracks clause 5.11, Resistance to cold</i>)

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MBN 10494-6 2021-03	Paint Test Methods - Part 6: Climatic Tests (here: <i>without clause 5.7, Natural weathering of coatings - Testing of corrosion behavior, without clause 5.8, weather resistance, without clause 5.9, simulated weathering</i>)
Nissan NES M 0158 CCT-I/II CCT.IV 2009	Methods of Compound Corrosion Tests
Porsche PPV 4017 2011-08	Corrosion testing - Modified climate change test (<i>withdrawn standard</i>)
Renault D17 2028-E 2016-10	Corrosion Test by Automatic Change of phases of salt spray, drying and humidity
SCANIA STD 4319 2017-04	Accelerated corrosion test - Atmospheric corrosion
SCANIA STD 4445 2014-08	Accelerated corrosion test - version II (ACT2)
VOLVO STD 1027,14 2005-07	Accelerated corrosion test, Atmospheric Corrosion
VOLVO STD 1027,1375 2010-09	Korrosionsbeständigkeit
VOLVO STD 423-0014 2015-01	Accelerated corrosion test - Atmospheric corrosion
Volvo VCS 1027,149 2002-06	Accelerated corrosion test
Volvo VCS 1027,1449 2014-02	Accelerated corrosion test Version II - ACT II
VOLVO VCS 1027,33719 2005-09	Climate ageing (Crack formation) Paints and enamels
VW PV 1073 2019-03	Corrosion Resistance of Chrome Surfaces
VW PV 1067 2007-05	Chromed surfaces - Resistance to calcium chloride containing road salt

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VW PV 1200 2019-10	Testing of Resistance to Environmental Cycle Test (+80/-40) °C
VW PV 1209 2016-02	Corrosion Test (Environmental Corrosion Cycle Test)
VW PV 1210 2016-02	Car body and attached parts - Corrosion Test
VW PV 2005 2000-09	Vehicle parts - Climate change test
VW TL 182 2017-01	Inorganic Protective Coating on Aluminum Parts Surface Protection Requirements (here: <i>without Chapter 4.4 Pkt. III, VII, VIII</i>)
VW TL 212 2016-12	Oxide Coatings on Aluminum Parts ; Surface Protection Requirements (here: <i>without chapter 3.8 Weather resistance</i>)
VW 96380 2015-07	Corrosion Test - Modified Environmental Cycle Test (here: <i>without Chapter 6.4</i>)
SAE J 2334 2016-04	Laboratory Cyclic Corrosion Test
VDA 233-102 2013-06	Cyclic corrosion test of materials and components within automotive engineering
VDA 621-412 1985-03	Coat technical tests - Resistance to chemicals of vehicle paintings (<i>withdrawn standard</i>)
VDA 621-415 1982-02	Coat technical tests - Testing of corrosion protection of vehicle paintings by cyclic changing stress (<i>withdrawn standard</i>)

3 Mechanic-technological testing

3.1 Determination of adhesion of coating materials *

DIN EN ISO 1519 2011-04	Paints and varnishes - Bend test (cylindrical mandrel)
DIN EN ISO 2409 2020-12	Paints and varnishes - Cross-cut test
DIN EN ISO 2819 2018-09	Metallic coatings on metallic substrates - Electrodeposited and chemically deposited coatings - Review of methods available for testing adhesion (here: <i>without clause 4.1, Testing by press shining, without clause 4.2, Testing by ball burnishing, without clause 4.3, Testing by shot-blasting, without clause 4.4, Testing by scalping, without clause 4.13, Cupping test, without clause 4.15, Rockwell-C-test, without clause 4.16, Scratch test, without clause 4.17, cavitation test</i>)
DIN EN ISO 20567-1 2017-07	Paints and varnishes - Determination of stone-chip resistance of coatings - Part 1: Multi-impact testing

3.2 Measuring of surface roughness***

DIN EN ISO 4287 2010-07	Geometrical Product Specifications (GPS) - Surface texture: Profile method - Terms, definitions and surface texture parameters
DIN EN ISO 4288 1998-04	Geometrical Product Specifications (GPS) - Surface texture: Profile method - Rules and procedures for the assessment of surface texture

3.3 Mechanic-technological testing of metallic samples with and without coatings***

ASTM E 384 2017	Microindentation Hardness of Materials (hier: <i>Micro hardness testing to Vickers</i>)
DIN 50190-3 1979-03	Hardness depth of heat-treated parts; determination of the effective depth of hardening after nitriding

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DIN 50969-2 2013-04	Prevention of hydrogen-induced brittle fracture of high-strength steel building elements - Part 2: Test methods
DIN EN 10328 2005-04	Iron and steel - Determination of the conventional depth of hardening after surface heating
DIN EN ISO 2639 2003-04	Steels - Determination and verification of the depth of carburized and hardened cases
DIN EN ISO 4516 2002-10	Metallic and other inorganic coatings - Vickers and Knoop microhardness tests (here: <i>Micro hardness testing to Vickers</i>)
DIN EN ISO 6507-1 2018-07	Metallic materials - Vickers hardness test - Part 1: Test method

3.4 Coat thickness measuring on raw materials***

ASTM B487 2020	Standard Test Method for Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of Cross Section
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 2017-12	Non-conductive coatings on non-magnetic electrically conductive base metals - Measurement of coating thickness - Amplitude-sensitive eddy-current method
DIN EN ISO 3497 2001-12	Metallic coatings - Measurement of coating thickness - X-ray spectrometric methods

3.5 Abrasion and wear test on raw materials (Taber-Abraser)***

ASTM D 4060 2019	Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
DIN 53754 1977-06	Testing of plastics - determination of abrasion, abrasive disk method (<i>withdrawn standard</i>)

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DIN EN ISO 7784-2
2016-12 Paints and varnishes - Determination of resistance to abrasion -
Part 2: Method with abrasive rubber wheels and rotating test
specimen

4 Physical-chemical testing***

4.1 Determination of surface weight by gravimetry

DIN EN ISO 1460
2020-12 Metallic coatings - Hot dip galvanized coatings on ferrous materials -
Gravimetric determination of the mass per unit area

DIN EN 12373-2
1999-02 Aluminium and aluminium alloys - Anodizing - Part 2: Determination
of mass per unit area (surface density) of anodic oxidation coatings -
Gravimetric method
(withdrawn standard)

DIN EN ISO 2106
2020-05 Anodizing of aluminium and its alloys - Determination of mass per unit
area (surface density) of anodic oxidation coatings - Gravimetric
method

DIN EN ISO 3210
2018-03 Anodizing of aluminium and its alloys - Assessment of quality of sealed
anodic oxidation coatings by measurement of the loss of mass after
immersion in acid solution(s)

DIN EN ISO 3892
2001-12 Conversion coatings on metallic materials - Determination of coating
mass per unit area - Gravimetric methods
(here: clause 4.2, Phosphate coating on iron and steel)

DIN EN ISO 9717
2018-02 Metallic and other inorganic coatings - Phosphate conversion coating
of metals

4.2 Photometric testing

DIN EN ISO 3613
2011-04 Metallic and other inorganic coatings - Chromate conversion coatings
on zinc, cadmium, aluminium-zinc alloys and zinc-aluminium alloys -
Test methods
*(here: clause 5.5.2, the presence of hexavalent chromium in colourless
and coloured coatings)*

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4.3 Elektro-chemical testing

ASTM B 456 2017	Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium (hier: <i>6.2, Process and Coating Requirements</i> <i>6.7, Coating Thickness</i> <i>6.8, Corrosion Testing</i> <i>6.9, STEP Test Requirements</i> <i>6.11, Density and Measurement of the Discontinuities in Chromium (Dubpernell Test)</i>)
ASTM B 504 2011	Standard Test Method for Measurement of Thickness of Metallic Coatings by the Coulometric Method
ASTM B 764 2014	Standard Test Method for Simultaneous Thickness and Electrode Potential Determination of Individual Layers in Multilayer Nickel Deposit (STEP Test)
DIN 50022 2007-11	Metallic and other inorganic coatings - Simultaneous thickness and electrode potential determination of individual layers in multilayer nickel deposits (STEP Test) <i>(withdrawn standard)</i>
DIN 53100 2020-04	Metallic coatings - Electroplated coatings of nickel plus chromium and of copper plus nickel plus chromium on plastics materials
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: <i>Annex A, Determination of cracks and pores in chromium coatings,</i> <i>Annex B, Coat thickness measuring,</i> <i>B.2, Destructive testing</i> <i>B.3.3, Non-destructive testing - X-ray spectroscopy</i> <i>Annex E, STEP-Test</i>)
DIN EN ISO 2177 2004-08	Metallic coatings - Measurement of coating thickness - Coulometric method by anodic dissolution

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5 Physical-chemical testing according to company standards

VW PV 1058 2015-04	Chromed surfaces - Determination of the Micro-Crack Pattern on Chrome-Plated Surfaces
VW PV 1063 2018-11	Chromed surfaces - Determination of Micropore Density

Abbreviations used:

AS	Australian Standard
ASTM	American Society for Testing and Materials
BMW AA	General Motors Worldwide Work instruction
BMW PR	General Motors Worldwide test guideline
Bosch	Standard of Bosch
DBL	Delivery condition of Daimler Benz
DIN	German Institute for Standard
EN	European Standard
FIAT MS	FIAT Material Standard
GM	General Motors
GMW	General Motors Worldwide
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
GM	General Motors
MBN	Standard of Mercedes Benz
NES	Nissan Engineering Standard
Nissan	Standard of Nissan
Porsche	Standard of Porsche
PPV	Porsche test procedure
Renault	Standard of Renault
SAE	Society of Automotive Engineers
SCANIA	Standard of Scania
VDA	German Association of the Automotive Industry
VOLVO STD	Volvo Group Standard
VOLVO VCS	Volvo Group Volvo Car Standard
VW	Volkswagen
VW PV	Test procedure of Volkswagen
VW TL	Delivery condition of Volkswagen

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