

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-14564-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: **28.03.2022**

Date of issue: 28.03.2022

Holder of certificate:

Atotech Deutschland GmbH & Co. KG

for its laboratories

Analytix und Materials Science, Erasmusstraße 20, 10553 Berlin

Analytiklabor, Ahornallee 4, 16818 Werder

Analytix und Materials Science, Untergasse 47, 65468 Trebur-Geinsheim

Tests in the fields:

physical, physico-chemical and chemical analyses of process water and waste water;

sampling of waste water;

**chemical analyses of industrial chemicals, salt solutions, metal solutions and electroplating baths
using chromatographic, spectrometric and titrimetric test methods;**

**metallographical tests, non-destructive layer thickness measurement methods, chemico-physical
investigations, corrosion tests and mechanical-technological tests on layers, layer systems, materials
and/or coated samples;**

physical investigations of aqueous and organic paint systems

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.

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

- *) the free choice of standard or equivalent testing methods.**
- ***) the modification, development and refinement of testing methods.**

The testing laboratory at the site Werder (Neuruppin) is permitted, without being required to inform and obtain prior approval from the DAkkS, to use in-house procedures from the Berlin site in the test areas 3.1, 3.3 - 3.7 and 3.9 - 3.10.

The listed testing methods are exemplary.

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, except for chapter 5.

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

The test methods are marked with the following symbols of the locations at which they are implemented.

- B** = Atotech Deutschland GmbH & Co. KG, location Berlin
- NP** = Atotech Deutschland GmbH & Co. KG, location Werder (Neuruppin)
- TR** = Atotech Deutschland GmbH & Co. KG, location Trebur

1 Analyses of process water and waste water

1.1 Sampling and sample preparation

DIN 38402-A 11 2009-02	Sampling of waste water	B, TR
DIN EN ISO 5667-3 (A 21) 2013-03	Water quality - Sampling - Part 3: Guidance on the preservation and handling of water samples	B, TR
DIN 38402-A 30 1998-07	Pretreatment, homogenization and aliquotation of non-homogeneous water samples	B, TR

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1.2 Physical and physico-chemical parameters

DIN EN ISO 10523 (C 5) 2012-04	Water quality - Determination of pH value	B, NP, TR
DIN EN 27888 (C 8) 1993-11	Water quality - Determination of electrical conductivity	B, NP, TR

1.3 Anions

DIN EN ISO 10304-1 (D 20) 2009-07	Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate	B, NP
DIN 38405-D 24 1987-05	Photometric determination of chromium(VI) using 1,5-diphenylcarbonohydrazide	B, TR
DIN 38405-D 27 2017-10	Determination of sulfide by gas extraction method (Deviation: <i>here only the procedure DIN 38405 - D 27-1 Determination of easily liberatable sulfide</i>)	B
Hach LCK 315 2013-04	Cyanide cuvette test, 0.01-0.6 mg/L CN (LCK 315)	B, NP, TR
Hach LCK 313 2019-10	Chromium (III und VI) cuvette test, 0.03-1.0 mg/L Cr (LCK 313)	TR
Hach LCK 353 2019-10	Sulfate cuvette test, 150-900 mg/L SO ₄ (LCK 353)	NP
Hach LCK 350 2019-03	Phosphate (ortho/total) cuvette test, 2.0-20.0 mg/L PO ₄ -P (LCK 350)	NP

1.4 Cations

DIN EN ISO 11885 (E 22) 2009-09	Water quality - Determination of 33 elements by inductively coupled plasma atomic emission spectroscopy (ICP-OES)	B, NP, TR
DIN EN ISO 17294-2 (E 29) 2017-01	Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of selected elements including uranium isotopes	B

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Hach LCK 303 2019-10	Ammonium cuvette test, 2.0-47.0 mg/L NH ₄ -N (LCK303)	NP, TR
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1.5 Sum parameters

DIN EN 1484 (H 3) 2019-04	Water analysis - Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC) (Deviation: <i>only particle-free sample (DOC)</i>)	B
Hach LCI 400 2019-10	COD cuvette test 0-1000 mg/L O ₂ (LCI 400/500)	B, NP
Hach LCK 410 2013-04	Free chlorine cuvette test, 0.05-2.0 mg/L Cl ₂ (LCK410)	NP, TR

2 Metallic layers and Coatings

DIN EN ISO 3613 2011-04	Metallic and other inorganic coatings - Chromate conversion coatings on zinc, cadmium, aluminum-zinc alloys and zinc-aluminum alloys - Test methods	B, TR
DIN EN 1811 2015-10	Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin	B
DIN EN 62321 2009-12; VDE 0042-1 2009-12	Electrotechnical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers) (Deviation: <i>only for lead, chromium, cadmium and hexavalent chromium</i>)	B, TR
DIN EN 62321-3-1 2014-10; VDE 0042-1-3-1 2014-10	Determination of certain substances in electrotechnical products - Part 3-1: Screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry	B
DIN EN 62321-5 2014-10; VDE 0042-1-5 2014-10	Determination of certain substances in electrotechnical products - Part 5: Cadmium, lead and chromium in polymers and electronics and cadmium and lead in metals by AAS, AFS, ICP-OES and ICP-MS (Deviation: <i>only ICP-OES</i>)	B, TR

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DIN EN 62321-7-1 2016-09; VDE 0042-1-7-1 2016-09	Determination of certain substances in electrotechnical products - Part 7-1: Determination of the presence of hexavalent chromium (Cr(VI)) in colorless and colored corrosion-protected coatings on metals by the colorimetric method	B, TR
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3 Analyses of industrial chemicals

3.1 Titrimetric determination of elements and anions in salt solutions, metal solutions and electroplating baths (B und TR)**

AV-A0000364 2018-10	Determination of nickel in nickel electrolytes by complexometry	B, NP
AV-A0000410 2015-06	Determination of copper in copper electrolytes by complexometry	B, NP
AV-A0000350 2011-03	Determination of Cr(VI) in chrome electrolytes and etches by redox titration	B, NP
AV-A0000430 2010-12	Determination of Cr(VI) in chrome electrolytes and etches by redox titration	B
PV-11321TIT 2009-01	Determination of Sn(II) in activators by redox titration	B, NP
AV-A0000082 2011-03	Determination of sodium hypophosphite in nickel electrolytes by redox titration	B, NP
AV-A0000480 2018-10	Determination of chloride in nickel electrolytes by precipitation titration	B, NP
AV-A0000353 2011-03	Determination of chloride in acid zinc electrolytes by precipitation titration	B, NP, TR
AV-A0000412 2018-10	Determination of chloride in acid copper electrolytes by precipitation titration	B, NP
AV-A0000026 2013-12	Determination of sulfuric acid in copper electrolytes by alkalimetry	B, NP
AV-A0000352 2018-10	Determination of boric acid in zinc- or nickel electrolytes by alkalimetry	B, NP, TR

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AV-A0000398 2019-08	Determination of sodium hydroxide in zinc- or zinc/nickel electrolytes by acidimetry	B, NP, TR
AV-A0001447 2018-03	Determination of wetting agent in cleaner by surfactant-titration	B
PV-9289-TIT 2017-02	Determination of wetting agent in conditioner by surfactant-titration	B
AV-A0000284 2011-06	Determination of total acid in tin electrolytes by alkalimetry	NP

3.2 Determination of organic substances in salt solutions, metal solutions and electroplating baths using gas chromatography with standard detector (FID) **

PV-10595GC 2019-01	Ethylene glycol and diethylene glycol monobutyl ether (Butyldiglycol) in queller by GC-FID	B
PV-14215GC 2019-01	Diethylene glycol monobutyl ether in etch cleaner by GC-FID	B

3.3 Determination of organic and anorganic substances in salt solutions, metal solutions and electroplating baths using ion chromatography (B)**

PV-9796-IC 2019-07	Determination of hypophosphite and methane sulfonic acid in tin-electrolytes by ion chromatography	B, NP
AV-A0000447 2018-09	Determination of chloride, sulfate, nitrate, phosphate and catalyst C in chrome-electrolytes by ion chromatography	B, NP
PV 13832IC 2015-03	Determination of catalyst N and T in chrome additive by ion chromatography	B, NP
AV-A0002346 2019-07	Determination of stabilizer C1 und C2, BluCr B and sulfate in tri-chrome electrolyte by ion chromatography	B
AV-A0002741 2016-10	Determination of ammonium in treated rinse water by cation-IC	B
PV-13016IC 2017-12	Determination of complexer in palladium electrolytes by cation-IC	B
AV-B0002064 2018-09	Determination of nitrate in nickel electrolytes by IC-UV	B

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PV-12957IC 2015-06	Determination of nitrate in copper additives by IC-UV	B
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3.4 Determination of organic substances in salt solutions, metal solutions and electroplating baths using liquid chromatography with standard detectors (UV, CA, RI, ELS) (B und TR)**

PV-12574LC 2010-09	Determination of complexing agents in nickel concentrate by LC-UV	B, NP
PV-11011LC 2017-04	Determination of brightener in copper concentrate by LC-UV	B, NP
AV-B0000444 2010-06	Determination of complexing agents in nickel electrolytes by LC-UV	B, NP
AV-B0001719 2019-07	Determination of wetting agents in nickel electrolytes by LC-CAD	B
AV-A0003069 2018-01	Determination of carrier in zinc/nickel electrolytes by LC-CAD	B, TR
AV-B0002095 2019-03	Determination of carrier in zinc/nickel electrolytes by LC-UV	B, TR
AV-A0002464 2016-10	Determination of Neolink E3 in copper electrolytes by LC-RI	B
AV-B0001325 2017-11	Determination of polymers in tin/silver electrolytes by LC-ELSD	B
EPA 8315A (SW-846) 1996-12	Determination of Carbonyl Compounds by High Performance Liquid Chromatography (HPLC) (Deviation: <i>only for formaldehyde and derivatization according 7.3.1 or 7.3.4</i>)	B

3.5 Determination of elements and anions in salt solutions, metal solutions, electroplating baths and waters using photometry (B und TR)**

AV-B0000831 2007-09	Determination of nitrate in nickel electrolytes by photometry	B, NP, TR
PV-14363UV 2014-07	Determination of stabilizer in copper concentrates by photometry	B, NP

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AV-A0001866 2013-01	Determination of ammonium in acid zinc or tri-chrome electrolytes by photometry	B, TR
AV-A0000283 2001-09	Determination of thiourea in tin electrolytes by photometry	B, NP, TR

3.6 Determination of elements in salt solutions, metal solutions, electroplating baths and waters using atomic absorption spectrometry (AAS) (B und TR)**

AV-A0001757 2014-05	Determination of iron in chrome electrolytes by F-AAS	B
AV-A0000170 2015-11	Determination of nickel in Zn/Ni electrolytes by F-AAS	B, NP, TR
AV-A0000171 2015-11	Determination of zinc in Zn/Ni electrolytes by F-AAS	B, NP, TR
AV-A0000156 2010-11	Determination of palladium in activators by F-AAS	B, NP
PV-14544AAS 2017-01	Determination of gold in raw materials by F-AAS	B, NP
PV-15606AAS 2018-05	Determination of sodium and potassium in e`less copper additives by F-AES	B, NP

3.7 Determination of elements in salt solutions, metal solutions, electroplating baths and waters using inductive coupled plasma atomic emission spectrometry (ICP-OES) (B und TR)**

PV-10348ICP 2006-01	Determination of As, Ca, Cr, Mg, Ni, Pb, Sb, Sn in copper concentrates by ICP-OES	B, NP
PV-14589ICP 2014-12	Determination of iron in reduction solutions by ICP-OES	B, NP
AV-B0000340 2019-09	Semiquantitative screening of 47 elements in metal salt solutions by ICP-OES	B, NP, TR
PV-14511ICP 2014-10	Determination of Ag, As, Cd, Co, Cr, Fe, In, Mg, Mn, Ni, Pb, Sn, Tl, Zn in copper additive by ICP - OES	B, NP, TR

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PV-14043ICP 2017-08	Determination of Pt, Rh, Ru in palladium stock solutions by ICP - OES	B
PV-11069ICP 2018-08	Determination of Ca, Cr, Cd, Mg, Ni, Pb, As, Sb, Sn in copper bases electrolytes by ICP-OES	B, NP
PV-14872ICP 2019-06	Determination of K, Ca, Mg, Cr, Ni, As, Sb, Sn in organic additives for copper electrolytes by ICP-OES	B, NP

3.8 Determination of elements in salt solutions, metal solutions, electroplating baths and ultrapure water using inductive coupled plasma mass spectrometry (ICP-MS) **

PV-15526PMS 2018-05	Al, Ag, As, Ba, Ca, Cd, Co, Cr, Fe, Li, In, Mg, Mn, Pb, Sn, Si, Sr, Ti, V, W and Zn in e`less copper additives by ICP-MS	B
AV-A0002902 2017-12	Ag, As, Bi, Cd, Fe, Ni, P, Pb, S, Sb, Se, Sn, Te und Zn in copper anodes by ICP-MS	B

3.9 Determination of elements and organic substances in salt solutions, metal solutions and electroplating baths using electro-chemical analysis (B)**

AV-A0001611 2011-12	Determination of Pb and Cd in nickel electrolytes by polarography	B, NP
AV-A0002353 2015-11	Determination of Bi in nickel electrolytes by polarography	B, NP
PV-14659POL 2015-10	Determination of Sn(II) in colloid Sn/Pd activators by polarography	NP
AV-A0001742 2012-01	Determination of leveller in copper-electrolytes by voltammetry	B, NP
AV-A0001741 2012-03	Determination of brightener in copper electrolytes by voltammetry	B, NP
PV-9666-CVS 2019-05	Determination of brightener activity in organic additives by voltammetry	B, NP
PV-9659-CVS 2019-05	Determination of leveller activity in organic additives by voltammetry	B, NP
AV-A0000787 2018-08	Determination of correction solution in copper electrolytes by voltammetry	B, NP

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3.10 Physical and physico-chemical analyses of raw materials, salt solutions, metal solutions and electroplating baths (B und TR)**

PV-5360-PHY 2008-06	Determination of density - oscillating U-tube principle	B, NP, TR
PV-5686-PHY 2019-01	Determination of pH value	B, NP, TR

4 Analysis of layers, layer systems and materials

4.1 Metallographical tests

DIN EN ISO 1463 2004-08	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method	B
DIN EN ISO 9220 1995-01	Metallic coatings - Measurement of coating thickness - Scanning electron microscope method	B

4.2 Measurement of coating thickness with non-destructive tests

DIN EN ISO 3497 2001-12	Metallic coatings - Measurement of coating thickness - X-ray spectrometric method	B
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4.3 Chemical - physical tests for coating thickness measurement on nickel-plated components using the STEP-Test and on chrome-plated components for quantitative detection of microcracks or micropores *

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)	B
ASTM B 764 2004-04	Standard Test Method for Simultaneous Thickness and Electrode Potential Determination of Individual Layers in Multilayer Nickel Deposit (STEP - Test)	B
DIN 53100 2007-06	Metallic coatings - Electroplated coatings of nickel plus chromium and of copper plus nickel plus chromium on plastics materials	B
ASTM B 604 1991	Standard Specification for Decorative Electroplated Coatings of Copper Plus Nickel Plus Chromium on Plastics	B

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4.4 Corrosion tests

4.4.1 Constant climate salt spray tests on screws, fasteners, sheet metal, components and decoratively coated parts to determine qualitative statements *

DIN EN ISO 9227 2017-07	Corrosion tests in artificial atmospheres - Salt spray tests	B, TR
ASTM B 368 2009	Standard Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test)	B, TR
ASTM B 117 2019	Standard Practice for Operating Salt Spray (Fog) Apparatus	B, TR

4.4.2 Condensation water climate test on screws, fasteners, sheets, components and decoratively coated parts to determine qualitative statements *

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)	B, TR
ASTM D 2247 2015	Standard Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity	TR

4.4.3 Kesternich test on screws, fasteners, sheets, components and decoratively coated parts to determine qualitative statements *

DIN EN ISO 6988 1997-03	Metallic and other non-organic coatings - Sulfur dioxide test with general condensation of moisture	B, TR
DIN 50018 2013-05	Testing in a saturated atmosphere in the presence of sulfur dioxide	B, TR
ISO 22479 2019-05	Corrosion of metals and alloys - Sulfur dioxide test in a humid atmosphere (fixed gas method)	B, TR

4.5 Mechanical-technological tests

4.5.1 Determination of the peel strength by means of a tensile test on copper-plated or decoratively coated components *

ASTM B 533 1985	Standard Test Method for Peel Strength of Metal Electroplated Plastics	B
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4.5.2 Torque/clamp force test on bare, galvanised or nickel-plated bolts or nuts to determine the tightening properties *

DIN EN ISO 16047 2013-01	Fasteners - Torque/clamp force testing	TR
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4.5.3 Geometric measurements

DIN EN ISO 4288 1998-04	Geometrical Product Specifications (GPS) - Surface texture: Profile method - Rules and procedures for the assessment of surface texture	TR
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4.5.4 Vickers hardness test

DIN EN ISO 6507-1 2018-07	Metallic materials - Vickers hardness test - Part 1: Test method (Deviation: <i>only HV5 - HV30</i>)	TR
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5 Tests according to manufacturer's instructions

Volvo STD 423-0014 (ACT) 2015-01	Accelerated corrosion test - Atmospheric corrosion	B, TR
Volvo VCS 1027, 1449 (ACT II) 2014-02	Accelerated corrosion test, version II - ACT II	B, TR
Ford CETP 00.00-L-467 2009-03	Global Laboratory Accelerated Cyclic Corrosion Test	B, TR
GMW 14872 2018-10	Cyclic Corrosion Laboratory Test	B, TR
VW PV 1210 2010-02	Car body and add-on parts, corrosion test	B, TR
VW PV 1209 2016-02	Add-on parts with a zinc or zinc alloy coating and aluminium add-on parts, corrosion test (climate corrosion change test)	B, TR
Renault D17 2028 -C (ECC1) 2007-10	Corrosion test by automatic change of phases of salt spray, drying and humidity	B, TR
VW PV 1063 2018-11	Chrome-plated surfaces - Determination of the micropore density	B

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Renault D17 1058 -K 2014-11	Neutral Salt Spray Test	B, TR
VW PV 1200 2004-10	Vehicle parts, test of climate change resistance (+80/-40) °C	B, TR
GMW 14668 2019-01	Minimum Performance Requirements for Decorative Chromium Plated Plastic Parts	B, TR
GMW 3044 2017-10	Material Specification: Zinc-Plating	TR
GMW 3359 2019-02	Material Specification: Non-Electrolytically Applied Zinc-Rich Coating	TR
GMW 4700 2014-02	Material Specification: Zinc Alloy Plating	TR
GMW 16730 2017-11	Material Specification: Cosmetic Coating, Black Zinc-Nickel Based	TR
Ford WZ 102 2019-02	Fastener - Torque/clamp force testing - Standard Conditions	TR
Renault 01-50-005 -H 2017-03	Fasteners coefficient of friction test	TR
VW 01131 2018-03	Determination of friction coefficients - Practical and assembly-oriented testing	TR
MBN 10544 2019-01	Testing of the torque/clamp force behaviour	TR

6 Physical investigations of aqueous and organic paint systems

DIN EN ISO 13736 2013-08	Determination of flash point - Abel closed-cup method	TR
DIN EN ISO 3251 2019-09	Paints, varnishes and plastics - Determination of non-volatile-matter content	TR
DIN EN ISO 2431 2012-03	Paints and varnishes - Determination of flow time by use of flow cups (Deviation: <i>only Cup3 and also <30s and >100s</i>)	TR

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DIN ISO 2811-1 2016-08	Paints and varnishes - Determination of density - Part 1: Pycnometer method	TR
DIN EN ISO 2409 2013-06	Paints and varnishes - Cross-cut test	TR

Abbreviations used:

ASTM	American Society for Testing and Materials
AV	In-house method of ATOTECH Deutschland GmbH & Co. KG
DIN	German Institut for Standardization
EN	European Norm
Ford WZ xxx	Ford Testing specification
Ford CETP xx.xx-x-xxx	Ford Testing specification
GMW xxxx(x)	General Motors Worldwide Engineering Standards
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
LCK	Hach Cuvette Test System
PHY	In-house method of ATOTECH Deutschland GmbH & Co. KG
PV	In-house method of ATOTECH Deutschland GmbH & Co. KG
Renault D17 xxxx-x	Renault Testing specification
Renault xx-xx-xxx-x	Renault Testing specification
Volvo VCS xxxx	Volvo Testing specification
Volvo STD xxx-xxxx	Volvo Testing specification
VW (PV) xxxx(x)	Volkswagen Testing specification