

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-14564-01-00 according to DIN EN ISO/IEC 17025:2005

Period of validity: 07.04.2016 to 06.04.2021

Date of issue: 07.04.2016

Holder of certificate:

Atotech Deutschland GmbH

for its laboratories

**Analytix und Materials Science, Erasmusstraße 20-24, 10553 Berlin
Analytiklabor, Ahornallee 4, 16818 Werder**

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 and corrosion tests of layers, layer systems, materials and/or
coated samples**

Abbreviations used: see last page

Within the given test areas marked with *, the testing laboratory is permitted without being required to inform and obtain prior approval from the DAkkS, the modification, development and refinement of testing methods. 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.

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

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The test methods are marked with the flowing symbols of the locations at which they are implemented:

- A = Atotech Deutschland GmbH, location Berlin - Analytics
- MS = Atotech Deutschland GmbH, location Berlin - Materials Science
- NP = Atotech Deutschland GmbH, location Werder near to Neuruppin

1 Analyses of process water and waste water

1.1 Sampling and sample preparation

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

1.2 Physical and physico-chemical parameters

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

1.3 Anions

DIN 38405-D 4 1985-07	Determination of fluoride	A
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	A, NP
DIN EN ISO 10304-3 (D 22) 1997-11	Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 3: Determination of chromate, iodide, sulfite, thiocyanate and thiosulfate	A

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DIN 38405-D 24 1987-05	Photometric determination of chromium(VI) using 1,5-diphenylcarbonohydrazide	A
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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)	A, NP
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1.5 Sum parameters

DIN EN 1484 (H 3) 1997-08	Water analysis - Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)	A
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DIN ISO 15705 2003-01	Water quality - Determination of the chemical oxygen demand index (ST-COD) - Small-scale sealed tube	NP
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2 Metallic layers and coatings

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	A
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DIN EN 1811 2012-10	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	A
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DIN EN 15205 2007-02	Determination of hexavalent chromium in corrosion protection layers - Qualitative analysis <i>(withdrawn)</i>	A
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DIN EN 62321; VDE 0042-1 2009-12	Electrotechnical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers) <i>(Deviation: only for lead, chromium, cadmium and hexavalent chromium)</i>	A
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IEC 62321 2013-06	Electrotechnical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers) <i>(Deviation: only for lead, chromium, cadmium and hexavalent chromium)</i>	A
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3 Analyses of industrial chemicals

3.1 Sampling for determination of hexavalent chromium according to BGI 505.5

AV-B0001729 2015-11	Determination of Cr(VI) in air Part 1: Sampling with stationary air sampler	A
AV-B0001657 2015-11	Determination of Cr(VI) in air Part 2: Sample preparation - Extraction of the filter	A

3.2 Titrimetric determination of elements and anions in salt solutions, metal solutions and electroplating baths *

AV-A0000069 2011-10	Determination of copper in copper-electrolytes (Iron containing) by titration	A, NP
AV-A0000364 2015-03	Determination of nickel in nickel-electrolytes by titration	A, NP
AV-B0000717 2006-03	Determination of Cr(VI) in chrome-electrolytes und etches by titration	A, NP
PV-11321TIT 2009-01	Determination of Sn(II) in activator by titration	A, NP
PV-10822TIT 2007-05	Determination of Sn(II) and Sn(total) in activator by titration	A, NP
AV-A0000082 2011-03	Determination of Na-hypophosphite in nickel-electrolytes by titration	A, NP
AV-A0002202 2014-02	Determination of Fe(II) and Fe (total) in copper-electrolytes by titration	A, NP

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PV-14366TIT 2014-07	Determination of iron (total) in copper-electrolytes by titration	A, NP
AV-B0000715 2006-03	Determination of chloride in nickel-electrolytes by titration	A, NP
AV-B0000716 2006-03	Determination of chloride in acid zinc-electrolytes by titration	A, NP
AV-A0000412 2010-07	Determination of chloride in copper-electrolytes by titration	A, NP
AV-A0000026 2013-12	Determination of sulfuric acid in copper-electrolytes by titration	A, NP

3.3 Determination of organic substances in salt solutions, metal solutions and electroplating baths using gas chromatography with standard detectors *

PV-10595GC 2015-12	Ethylene glycol and diethylene glycol monobutyl ether (Butyldiglycol) in queller by GC	A
PV-14215GC 2014-05	Diethylene glycol monobutyl ether in etchcleaner by GC	A

3.4 Determination of organic and anorganic substances in salt solutions, metal solutions and electroplating baths using ion chromatography *

AV-B0000487 2009-03	Determination of hypophosphite and methanesulfonic acid in tin-electrolytes by ion chromatography	A, NP
PV-9796-IC 2011-03	Determination of hypophosphite and methanesulfonic acid in tin-electrolytes by ion chromatography	A, NP
AV-A0000447 2011-07	Determination of chloride, sulfate, nitrate, phosphate and catalyst C in chrome-electrolytes by ion chromatography	A, NP
PV 13832IC 2015-03	Determination of catalyst C in chrome-additive by ion chromatography	A, NP

3.5 Determination of organic substances in salt solutions, metal solutions and electroplating baths using liquid chromatography with standard detectors *

PV-12574LC 2010-09	Determination of complexing agents in nickel-concentrate by liquid chromatography	A, NP
PV-11011LC 2015-04	Determination of brightener in copper-concentrate by liquid chromatography	A, NP
AV-B0000444 2010-06	Determination of complexing agents in nickel-electrolytes by liquid chromatography	A, NP
PV-13667LC 2013-02	Determination of brightener in nickel-concentrate by liquid chromatography	A, NP

3.6 Determination of elements and anions in salt solutions, metal solutions, electroplating baths and waters using photometry *

AV-B0000831 2007-09	Determination of nitrate in nickel-electrolytes by photometry	A, NP
AV-A0000249 2013-03	Determination of palladium in activator by photometry	A
AV-B0000543 2003-10	Determination of palladium in activator by photometry	A
PV-14363UV 2014-07	Determination of stabilizer in copper-concentrate by photometry	A, NP
AV-B0001647 2015-11	Determination of Cr(VI) in extraction solution Part 3: Determination of Cr(VI) after extraction by photometry	A

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

AV-A0001757 2014-05	Determination of iron in chrome-electrolytes by atomic absorption spectrometry	A
AV-A0000170 2015-11	Determination of nickel in Zn-Ni-electrolytes by atomic absorption spectrometry	A, NP

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AV-A0000171 2015-11	Determination of zinc in Zn-Ni-electrolytes by atomic absorption spectrometry	A, NP
AV-A0000156 2010-11	Determination of palladium in activator by atomic absorption spectrometry	A, NP
PV-14544AAS 2014-11	Determination of gold (Au) in raw materials by atomic absorption spectrometry	A, NP
PV-14303HGA 2014-06	Determination of sodium and potassium in organic additives by atomic absorption spectrometry	A, NP

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

PV-10348ICP 2006-01	Determination of As, Ca, Cr, Mg, Ni, Pb, Sb and Sn in copper-concentrate by ICP-OES	A, NP
PV-10354ICP 2006-01	Determination of As, Ca, Cr, Mg, Ni, Pb, Sb and Sn in copper-base-electrolytes by ICP-OES	A, NP
PV-14589ICP 2014-12	Determination of iron in reduction solution by ICP-OES	A, NP
AV-B0000340 2016-02	Semiquantitative screening of 47 elements in metal salt solutions by ICP-OES	A
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	A, NP
PV-14043ICP 2015-01	Determination of Pt, Rh and Ru in palladiumsulfate solution by ICP - OES	A

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

DIN EN ISO 17294-2 2005-02	Water quality - Application of inductive coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of 62 elements	A
AV-B0001655 2013-12	Determination of chrome in extraction solutions by ICP-MS	A

3.10 Determination of elements and organic substances in salt solutions, metal solutions and electroplating baths using electro-chemical analysis *

AV-B0000974 2008-10	Determination of Pb and Cd in nickel-electrolytes by polarography	A, NP
AV-A0002353 2015-11	Determination of Bi in nickel-electrolytes by polarography	A
PV-14659POL 2015-10	Determination of Sn(II) in colloid Sn-Pd-activator by polarography	A
AV-A0001742 2012-01	Determination of leveller in copper-electrolytes by voltammetry	A, NP
AV-A0001741 2012-03	Determination of brightener in copper-electrolytes by voltammetry	A, NP
AV-A0001743 2012-01	Determination of gloss carrier in copper-electrolytes by voltammetry	A, NP
PV-9666-CVS 2015-10	Determination of brightener in organic additives by voltammetry	A, NP
PV-9659-CVS 2015-10	Determination of activity of leveller in organic additives by voltammetry	A, NP

3.11 Physical and physico-chemical analyses of salt solutions, metal solutions and electroplating baths

5360-PHY 2008-06	Determination of density - oscillating U-tube principle	A, NP
5686-PHY 2015-06	Determination of pH value	A, NP

4 Analysis of layers, layer systems and materials

4.1 Metallographical tests

Measurement of coating thickness - Microscopical methods

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

DIN EN ISO 9220 1995-01	Metallic coatings - Measurement of coating thickness - Scanning electron microscope method	MS
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4.2 Measurement of coating thickness with non-destructive tests

Measurement of coating thickness - X-ray spectrometric methods

DIN EN ISO 3497 2001-12	Metallic coatings - Measurement of coating thickness - X-ray spectrometric method	MS
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4.3 Chemico-physical tests

DIN 50022 2007-11	Metallic and other inorganic coatings - Simultaneous thickness and electrode potential determination of individual layers in multilayer nickel deposits (STEP Test)	MS
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ASTM B 764-04 2004-04 (bestätigt 2014)	Standard test method for simultaneous thickness and electrode potential determination of Individual layers in multilayer nickel deposit (STEP - Test)	MS
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4.4 Corrosion tests

DIN EN ISO 9227 2012-09	Corrosion tests in artificial atmospheres - Neutral salt spray test (NSS) and Copper-accelerated acetic acid salt spray test (CASS)	MS
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Abbreviations used:

ASTM	American Society for Testing and Materials
AV	In-house method of ATOTECH Deutschland GmbH
BGI	Employer's Liability Insurance Association Information
DIN	German Institut for Standardization
EN	European Norm
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
PHY	In-house method of ATOTECH Deutschland GmbH
PV	In-house method of ATOTECH Deutschland GmbH
VDE	Association for Electrical, Electronic & Information Technologies e. V.