

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-18800-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 15.10.2020

Date of issue: 15.10.2020

Holder of certificate:

**ifn Forschungs- und Technologiezentrum GmbH
Prüf- und Umweltlaboratorium
Dr.-Bergius-Straße 19, 06729 Elsteraue OT Tröglitz**

Tests in the fields:

Physical, physico-chemical and chemical analysis of water, waste water, sludge, sediments, waste, materials for recycling and soils

Selected analysis of soil gas

Analysis of mineral oil products, fuels, recovered fuels and mixed fuels

Sampling of water and from aquifers

Sampling of waste

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

Page 1 of 13

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

Annex to the accreditation certificate D-PL-18800-01-00

1 Analysis of water and from aquifers

1.1 Sampling and sample preparation

DIN EN ISO 5667-1 (A 4) 2007-04	Water quality - Sampling - Part 1: Guidance on the design of sampling programmes and sampling techniques
DIN 38402-A 13 1985-12	Sampling from aquifers
DIN EN ISO 5667-3 (A 21) 2013-03	Water quality - Sampling - Part 3: Preservation and handling of water samples
DIN 38402-A 30 1998-07	Pretreatment, homogenisation and aliquotation of non-homogeneous water samples

1.2 Physical and physico-chemical parameters

DIN EN ISO 7887 (C 1) 2012-04	Water quality - Examination and determination of colour
DIN 38404-C 3 2005-07	Determination of absorption in the range of UV radiation, spectral absorption coefficient
DIN 38404-C 4 1976-12	Determination of temperature
DIN EN ISO 10523 (C 5) 2012-04	Water quality - Determination of pH
DIN EN 27888 (C 8) 1993-11	Water quality - Determination of electrical conductivity

1.3 Anions

DIN 38405-D 1-2 1985-12	Volumetric determination of chloride ions by potentiometry
DIN 38405-D 4-1 1985-07	Direct determination of fluoride ions by fluoride ion-selective electrode
DIN 38405-D 5-1 1985-01	Determination of sulphate ions by complexometric titration

Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

DIN 38405-D 9 2011-09	Photometric determination of nitrate
DIN EN 26777 (D 10) 1993-04	Water quality - Determination of nitrite - Spectrometric method
DIN 38405-D 13 2011-04	Determination of cyanides
DIN 38405-D 14 1988-12	Determination of cyanides in drinking water, and in groundwater and surface water with low pollution levels
DIN EN ISO 10304-1 (D20) 2009-07	Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulphate
DIN 38405-D 24 1987-05	Photometric determination of chromium(VI) using 1,5-diphenylcarbonohydrazide
DIN 38405-D 26 1989-04	Photometric determination of dissolved sulphide
DIN 38405-D 27 1992-07	Determination of readily liberated sulphide
DIN EN ISO 18412 (D 40) 2007-02	Water quality - Determination of chromium(VI) - Photometric method for weakly contaminated water

1.4 Cations

DIN 38406-E 1 1983-05	Determination of iron
DIN 38406-E 5 1983-10	Determination of ammonia-nitrogen
DIN EN ISO 12846 (E 12) 2012-08	Water quality - Determination of mercury - Method using atomic absorption spectrometry (AAS) with and without enrichment
DIN EN ISO 11885 (E 22) 2009-09	Water quality - Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES)

Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

1.5 Jointly determinable substances

DIN EN ISO 10301 (F 4) 1997-08	Water quality - Determination of highly volatile halogenated hydrocarbons - Gas-chromatographic methods
DIN 38407-F 8 1995-10	Determination of 6 polycyclic aromatic hydrocarbons (PAHs) in water by high performance liquid chromatography (HPLC) with fluorescence detection
DIN 38407-F 9-1 1991-05	Determination of benzene and some of its derivatives
DIN EN ISO 17993 (F 18) 2004-03	Water quality - Determination of 15 polycyclic aromatic hydrocarbons (PAHs) in water by HPLC with fluorescence detection after liquid-liquid extraction

1.6 Gaseous components

DIN EN ISO 5814 (G 22) 2013-02	Water quality - Determination of dissolved oxygen - Electrochemical probe method
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1.7 Summary indices of actions and substances

DIN 38409-H 1 1987-01	Determination of total dry residue, filtrate dry residue and residue on ignition
DIN 38409-H 2 1987-03	Determination of filterable matter and the residue on ignition
DIN EN 1484 (H 3) 1997-08	Water analysis - Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)
DIN EN ISO 8467 (H 5) 1995-05	Water quality - Determination of permanganate index
DIN 38409-H 6 1986-01	Water hardness
DIN 38409-H 7 2005-12	Determination of acid and base-neutralising capacities
DIN 38409-H 9 1980-07	Determination of the settleable matter by volume in water and waste water

Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

DIN EN ISO 9562 (H 14) 2005-02	Water quality - Determination of adsorbable organically bound halogens (AOX)
DIN 38409-H 16 1984-06	Determination of the phenol index
DIN 38409-H 27 1992-07	Determination of total bound nitrogen TN _b
DIN ISO 15705 (H 45) 2003-01	Water quality - Determination of the chemical oxygen demand index (ST-COD) - small-scale sealed tube method
DIN EN ISO 9377-2 (H 53) 2001-07	Water quality - Determination of hydrocarbon oil index - Part 2: Method using solvent extraction and gas chromatography
DIN ISO 11349 (H 56) 2015-12	Determination of low-volatility lipophilic substances - Gravimetric method

2 Analyses of soils, sludge and sediments

2.1 Sample pretreatment

DIN ISO 11464 2006-12	Soil quality - Pretreatment of samples for physico-chemical analysis
DIN ISO 11466 1997-06	Soil quality - Extraction of trace elements soluble in aqua regia
DIN ISO 14507 2004-07	Soil quality - Pretreatment of samples for determination of organic contaminants in soils
DIN EN 12457-4 2003-01	Characterisation of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 4: One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 10 mm (without or with limited size reduction) (Deviation: <i>Here also for soils, sludges and sediments</i>)
DIN 19747 2009-07	Investigation of solids - Pretreatment, preparation and processing of samples for chemical, biological and physical investigations

Annex to the accreditation certificate D-PL-18800-01-00

2.2 Physical and physico-chemical parameters

DIN ISO 10390 2005-12	Soil quality - Determination of pH
DIN ISO 11262 2012-04	Soil quality - Determination of total cyanide
DIN ISO 11265 1997-06	Soil quality - Determination of specific electrical conductivity
DIN ISO 11465 1996-12	Soil quality - Determination of dry matter and water content on a mass basis - Gravimetric method
DIN EN 12176 (S 5) 1998-06	Characterisation of sludge - Determination of the pH value
DIN EN 12879 (S 3a) 2001-02	Characterisation of sludges - Determination of loss on ignition of dry mass
DIN EN 12880 (S 2a) 2001-02	Characterisation of sludges - Determination of dry residue and water content
DIN EN 13346 (S 7a) 2001-04	Characterisation of sludges - Determination of trace elements and phosphorus - Aqua regia extraction methods
DIN EN 14346 2007-03	Characterisation of waste - Calculation of dry matter by determination of dry residue or water content (Deviation: <i>Here also for soils, sludges and sediments</i>)
DIN EN 15169 2007-05	Characterisation of waste - Determination of loss on ignition in waste, sludge and sediments (Deviation: <i>Here also for soils</i>)
DIN EN 15170 2009-05	Characterisation of sludges - Determination of calorific value (Deviation: <i>Here also for soils and sediments</i>)
DIN EN 15216 2008-01	Characterisation of waste - Determination of total dissolved solids (TDS) in water and eluates (Deviation: <i>Here also for soils, sludges and sediments</i>)
DIN 38414-S 4 1984-10	Determination of leachability with water (Deviation: <i>Here also for soils</i>)

Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

LAGA EW 98
2012-11

Guideline on procedures for the physical, chemical examination of waste, contaminated soils and materials from brownfields - Preparation and analysis of aqueous eluates
(Deviation: *Here also for sludges and sediments*)

2.3 Elements

DIN ISO 22036
2009-06

Soil quality - Determination of trace elements in extracts of soil by inductively coupled plasma atomic emission spectrometry (ICP-AES)

DIN EN ISO 12846 (E 12)
2012-08

Water quality - Determination of mercury - Method using atomic absorption spectrometry (AAS) with and without enrichment
(Deviation for soils: *Determination in aqua regia extraction solution, compensation of matrix failures*)

DIN EN 13657
2003-01

Characterisation of waste - Digestion for subsequent determination of aqua regia soluble portion of elements in waste
(Deviation: *Here also for soils, sludges and sediments*)

LAGA CN 2/79
1983-12

Guideline on procedures for physical and chemical examination in connection with the disposal of waste; determination of cyanide in waste
(Deviation: *Here also for soils, sludges and sediments*)

2.4 Organic substances

DIN ISO 10694
1996-08

Soil quality - Determination of organic carbon and total carbon after dry combustion (elemental analysis)

DIN ISO 13877
2000-01

Soil quality - Determination of polynuclear aromatic hydrocarbons - Method using high-performance liquid chromatography

DIN ISO 18287
2006-05

Soil quality - Determination of polycyclic aromatic hydrocarbons (PAH) - Gas chromatographic method with mass spectrometric detection (GC-MS)

DIN EN ISO 16703
2011-09

Soil quality - Determination of content of hydrocarbon in the range C₁₀ bis C₄₀ by gas chromatography

DIN EN ISO 22155
2016-07

Soil quality - Gas chromatographic determination of volatile aromatic and halogenated hydrocarbons and selected ethers - Static headspace method

Annex to the accreditation certificate D-PL-18800-01-00

DIN EN 13137 (S 30) 2001-12	Characterisation of waste - Determination of total organic carbon (TOC) in waste, sludges and sediments (Deviation: <i>Here also for soils</i>)
DIN EN 14039 2005-01	Characterisation of waste - Determination of hydrocarbon content in the range of C ₁₀ to C ₄₀ by gas chromatography (Deviation: <i>Here also for soils, sludges and sediments</i>)
DIN EN 15308 2016-12	Characterisation of waste - Determination of selected polychlorinated biphenyls (PCB) in solid waste by using capillary gas chromatography with electron capture or mass spectrometric detection (Deviation: <i>Here also for soils, sludges and sediments</i>)
DIN EN 15936 2012-11	Sludge, treated biowaste, soil and waste - Determination of total organic carbon (TOC) by dry combustion (Deviation: <i>Here also for sediments</i>)
DIN 38409-H 16 1984-06	Determination of the phenol index (Deviation for soils: <i>Overlay with water and distillation</i>)
DIN 38414-S 17 2017-01	Determination of the organically bound halogens amenable to extraction (EOX) (Deviation: <i>Here also for soils</i>)
DIN 38414-S 18 1989-11	Determination of adsorbed organically bound halogens (AOX) (Deviation: <i>Here also for soils</i>)
DIN 38414-S 20 1996-01	Determination of 6 polychlorinated biphenyls (PCB) (Deviation for soils: <i>Extraction with n-hexane, solid phase extraction</i>)
LAGA KW 04 2009-12	Determination of the content of hydrocarbons in waste - Examination and analysis strategy (Hydrocarbon index, extractable lipophilic substances) (Deviation: <i>Here also for soils, sludges and sediments</i>)

3 Analysis of soil gas

VDI 3865 Blatt 3 1998-06	Measurement of organic soil pollutants - Gas-chromatographic determination of volatile organic compounds in soil gas adsorption at activated carbon and desorption with organic solvents (Deviation: <i>Without sampling; only BTEX, overlaid with benzyl alcohol</i>)
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Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

4 Analysis of waste

4.1 Sampling and sample preparation

DIN 19747 2009-07	Investigation of solids - Pretreatment, preparation and processing of samples for chemical, biological and physical investigations
LAGA EW 98 2012-11	Guideline on procedures for the physical, chemical examination of waste, contaminated soils and materials from brownfields - Preparation and analysis of aqueous eluates
LAGA PN 98 2001-12	Guideline on procedures for physical, chemical and biological examination in connection with the recycling/disposal of waste - Basic rules for the taking of samples from solid and semi-solid waste and deposited materials

4.2 Summary indices of actions and substances

DIN EN 12176 (S 5) 1998-06	Characterisation of sludge - Determination of the pH value
DIN EN 12457-4 2003-01	Characterisation of waste - Leaching - Compliance test for leaching of granular waste materials and sludges - Part 4: One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 10 mm (without or with limited size reduction)
DIN EN 12879 (S 3a) 2001-02	Characterisation of sludges - Determination of loss on ignition of dry mass
DIN EN 12880 (S 2a) 2001-02	Characterisation of sludges - Determination of dry residue and water content
DIN EN 13346 (S 7a) 2001-04	Characterisation of sludges - Determination of trace elements and phosphorus - Aqua regia extraction methods
DIN EN 13657 2003-01	Characterisation of waste - Digestion for subsequent determination of aqua regia soluble portion of elements in waste
DIN EN 14039 2005-01	Characterisation of waste - Determination of hydrocarbon content in the range of C ₁₀ to C ₄₀ by gas chromatography
DIN EN 14346 2007-03	Characterisation of waste - Calculation of dry matter by determination of dry residue or water content

Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

DIN EN 15169 2007-05	Characterisation of waste - Determination of loss on ignition in waste, sludge and sediments
DIN EN 15170 2009-05	Characterisation of sludges - Determination of calorific value
DIN 38414-S 4 1984-10	Determination of leachability with water
LAGA CN 2/79 1983-12	Guideline on procedures for physical and chemical examination in connection with the disposal of waste; determination of cyanide in waste

4.3 Organic substances

DIN ISO 10694 1996-08	Soil quality - Determination of organic carbon and total carbon after dry combustion (elemental analysis) (Deviation: <i>Here also for waste</i>)
DIN EN 13137 (S 30) 2001-12	Characterisation of waste - Determination of total organic carbon (TOC) in waste, sludges and sediments
DIN EN 15216 2008-01	Characterisation of waste - Determination of total dissolved solids (TDS) in water and eluates
DIN EN 15308 2016-12	Characterisation of waste - Determination of selected polychlorinated biphenyls (PCB) in solid waste by using capillary gas chromatography with electron capture or mass spectrometric detection
DIN EN 15936 2012-11	Sludge, treated biowaste, soil and waste - Determination of total organic carbon (TOC) by dry combustion
DIN 38414-S 17 2017-01	Determination of the organically bound halogens amenable to extraction (EOX)
DIN 38414-S 18 1989-11	Determination of adsorbed organically bound halogens (AOX)
DIN 38414-S 20 1996-01	Determination of 6 polychlorinated biphenyls (PCB)
LAGA KW 04 2009-12	Determination of the content of hydrocarbons in waste - Examination and analysis strategy (Hydrocarbon index, extractable lipophilic substances)

Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

5 Analysis of mineral oil products, fuels, recovered fuels and mixed fuels

DIN ISO 3016 1982-10	Petroleum oils - Determination of pour point
DIN ISO 3733 1980-12	Petroleum products and bituminous materials - Determination of water, distillation method
DIN EN ISO 2592 2002-09	Petroleum products - Determination of flash and fire points - Cleveland open cup method
DIN EN ISO 2719 2016-11	Determination of flash point - Pensky-Martens closed cup method
DIN EN ISO 3675 1999-11	Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method
DIN EN ISO 6245 2003-01	Petroleum products -Determination of ash
DIN EN ISO 20846 2012-01	Petroleum products - Determination of sulphur content of automotive fuels - Ultraviolet fluorescence method
DIN EN 12766-1 2000-11	Petroleum products and used oils - Determination of PCBs and related products - Part 1: Separation and determination of selected PCB congeners by gas chromatography (GC) using an electron capture detector (ECD)
DIN EN 12766-2 2001-12	Petroleum products and used oils - Determination of PCBs and related products - Part 2: Calculation of polychlorinated biphenyl (PCB)
DIN EN 15400 2011-05	Solid recovered fuels - Determination of gross calorific value
DIN EN 23015 1994-05	Petroleum products - Determination of cloud point
DIN 38409-H 16 1984-06	Determination of the phenol index (Deviation for fuels: <i>Overlay with water and distillation</i>)
DIN 51400-2 2001-05	Testing of mineral oils and fuels - Determination of sulphur content (total sulphur) - Part 2: Combusting according to Grote-Krekeler, acidimetric titration, gravimetric determination

Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

DIN 51551-1 2009-04	Testing of lubricants and liquid fuels - Determination of the carbon residue - Part 1: Conradson method
DIN 51562-1 1999-01	Viscometry - Measurement of kinematic viscosity by means of the Ubbelohde viscometer - Part 1: Viscometer specification and measurement procedure
DIN 51577-1 1982-11	Testing of mineral oil hydrocarbons and similar products - Determination of chlorine content - Combustion in the bomb and according to Grote-Krekeler
DIN 51581-1 2011-09	Testing of petroleum products - Determination of evaporation loss - Part 1: Noack test
DIN 51718 2002-06	Testing of solid fuels - Determination of the water content and the moisture of analysis sample
DIN 51719 1997-07	Testing of solid fuels - Determination of ash content
DIN 51723 2002-06	Testing of solid fuels - Determination of fluorine content
DIN 51724-1 2012-07	Testing of solid fuels - Determination of sulphur content - Part 1: Total sulphur
DIN 51727 2011-11	Testing of solid fuels - Determination of chlorine content
DIN 51777-1 1983-03	Testing of mineral oil hydrocarbons and solvents - Determination of water content according to Karl Fischer; direct method
DIN 51793 1971-07	Determination of water content and sediments in fuel oils and crude oils - Centrifuge method
DIN 51900-1 2000-04 and Corrigendum 1 2004-02	Testing of solid and liquid fuels - Determination of gross calorific value by the bomb calorimeter and calculation of net calorific value - Part 1: General principles, apparatus, methods
DIN 51900-2 2003-05	Testing of solid and liquid fuels - Determination of gross calorific value by the bomb calorimeter and calculation of net calorific value - Part 2: Method using isoperibol or static jacket calorimeter

Valid from: 15.10.2020
Date of issue: 15.10.2020

Annex to the accreditation certificate D-PL-18800-01-00

DIN 51900-3
2005-01

Testing of solid and liquid fuels - Determination of gross calorific value by the bomb calorimeter and calculation of net calorific value - Part 3: Method using adiabatic jacket

Abbreviations used:

DIN	Deutsches Institut für Normung e. V. (German Institute for Standardization)
EN	European standard
IEC	International Electrotechnical Commission
ISO	International Organisation for Standardisation
LAGA	Länderarbeitsgemeinschaft Abfall (Regional Working Group on Waste)
LAWA	Länderarbeitsgemeinschaft Wasser (Federal/Regional Working Group on Water)
DWA	Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e. V. (German Association for Water, Wastewater and Waste)