

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

HuK Umweltlabor GmbH
Otto-Hahn-Straße 2, 57482 Wenden

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields:

physical, physico-chemical, chemical, microbiological and selected biological analysis of water, raw water, waste water, swimming pool and bathing pool water, barrages and lakes, groundwater, running waters, surface water and cooling water, as well as condensates and feedwater from recooling systems, ventilation and air-conditioning systems and evaporative cooling systems; chemical, sensory and microbiological analysis in accordance with the German Drinking Water Ordinance, sampling of raw and drinking water; physico-chemical and chemical analysis of soils, waste, sludges and sediments as well as waste and its eluates for deposition, recycled products, road building materials and materials for recycling; physico-chemical and chemical analysis of used oils and solid fuels, secondary fuels and solid biofuels; selected chemical analysis of plastics; selected physico-chemical and chemical methods for the analysis of slags, ceramic and oxidic raw materials and materials, steels and iron materials, alloys and metals; hygienic microbiological analysis in health care facilities; sampling of waste water, cooling water, raw water, swimming pool and bathing pool water, water from barrages and lakes, water from recooling systems and ventilation and air-conditioning systems, from aquifers, running waters, of sludges and ceramic and oxidic raw materials as well as ferrous alloys and added metals; selected sampling and physico-chemical, chemical and microbiological analysis in the area of indoor air and dust measurements; analysis of waste for deposition in accordance with the German Landfill Ordinance, Annex 4; Specialist modules for water, waste, soil and contaminated sites

The accreditation certificate shall only apply in connection with the notice of accreditation of 31.03.2017 with the accreditation number D-PL-14055-01 and is valid until 30.03.2022. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 59 pages.

Registration number of the certificate: **D-PL-14055-01-01**

Berlin,
10.07.2017

Andrea Valbuena
Head of Division

Translation issued:
10.07.2017



Head of Division

Deutsche Akkreditierungsstelle GmbH

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The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkKS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkKS.

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-14055-01-01 according to DIN EN ISO/IEC 17025:2005

Period of validity: 31.03.2017 to 30.03.2022

Date of issue: 10.07.2017

Holder of certificate:

HuK Umweltlabor GmbH
Otto-Hahn-Straße 2, 57482 Wenden

Tests in the fields:

physical, physico-chemical, chemical, microbiological and selected biological analysis of water, raw water, waste water, swimming pool and bathing pool water, barrages and lakes, groundwater, running waters, surface water and cooling water, as well as condensates and feedwater from recooling systems, ventilation and air-conditioning systems and evaporative cooling systems;

chemical, sensory and microbiological analysis in accordance with the German Drinking Water Ordinance, sampling of raw and drinking water;

physico-chemical and chemical analysis of soils, waste, sludges and sediments as well as waste and its eluates for deposition, recycled products, road building materials and materials for recycling;

physico-chemical and chemical analysis of used oils and solid fuels, secondary fuels and solid biofuels;

selected chemical analysis of plastics;

selected physico-chemical and chemical methods for the analysis of slags, ceramic and oxidic raw materials and materials, steels and iron materials, alloys and metals;

hygienic microbiological analysis in health care facilities;

sampling of waste water, cooling water, raw water, swimming pool and bathing pool water, water from barrages and lakes, water from recooling systems and ventilation and air-conditioning systems, from aquifers, running waters, of sludges and ceramic and oxidic raw materials as well as ferrous alloys and added metals;

selected sampling and physico-chemical, chemical and microbiological analysis in the area of indoor air and dust measurements;

analysis of waste for deposition in accordance with the German Landfill Ordinance, Annex 4;

Specialist modules for water, waste, soil and contaminated sites

Abbreviations used: see last page

Within sections 1, 2, 6, 7, 8, 9, 10, 11, 12 and 15.1, the testing laboratory is permitted to apply the listed standardised or equivalent test methods with different versions of the standards without obtaining prior notification and consent from DAkkS.

For the test areas marked with *, the laboratory is permitted to freely select standard test methods or equivalent methods without obtaining prior notification and consent from DAkkS. The test methods listed are given by way of example.

The laboratory has an up-to-date list of all test methods within the flexible scope of accreditation.

1 Water (cooling water, raw water, waste water, swimming pool and bathing pool water, water from barrages and lakes, aquifers and running waters, water, condensates and feedwater from recooling systems, ventilation and air-conditioning systems and evaporative cooling systems)

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 11 2009-02	Sampling of waste water
DIN ISO 5667-5 (A 14) 2011-02	Water quality - Sampling - Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems
DIN 38402-A 15 2010-04	Sampling from running waters
DIN EN ISO 5667-3 (A 21) 2013-03	Water quality - Sampling - Part 3: Preservation and handling of samples
DIN EN ISO 15587-1 (A 31) 2002-07	Water quality - Digestion for the determination of elements in water - Part 1: Aqua regia digestion
DIN EN ISO 15587-2 (A 32) 2002-07	Water quality - Digestion for the determination of elements in water - Part 2: Nitric acid digestion
DIN EN ISO 19458 (K 19) 2006-12	Water quality - Sampling for microbiological analysis

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DIN 19643-1 2012-11	Treatment of swimming pool and bathing pool water - Part 1: General requirements (Section 14.2 Sampling points and sampling)
VDI 2047 Blatt 2 2015-01	Open recooler systems - Securing hygienically sound operation of evaporative cooling systems (VDI Cooling Tower Code of Practice) (here: <i>implementation of sampling only</i>)
VDI 6022 Blatt 1 2011-07	Ventilation and indoor-air quality - Hygiene requirements for ventilation and air-conditioning systems and units (VDI Ventilation Code of Practice) - Section 8 (here: <i>sampling of aqueous media</i>)

1.2 Physical and physico-chemical parameters

DIN 38404-C 3 2005-07	Determination of absorption in the range of UV radiation, spectral absorption coefficient
DIN EN ISO 10523 (C 5) 2012-04	Water quality - Determination of pH
DEV C 9 1994	Determination of density

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 sulphate
DIN EN ISO 10304-4 (D 25) 1999-07	Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 4: Determination of chlorate, chloride and chlorite in water with low contamination
DIN EN ISO 18412 (D 40) 2007-02	Water quality - Determination of chromium(VI) - Photometric method for weakly contaminated water

1.4 Cations

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 spectroscopy (ICP-OES)
DIN EN ISO 11732 (E 23) 2005-05	Water quality - Determination of ammonium nitrogen - Method by flow analysis (CFA and FIA) and spectrometric detection
DIN EN ISO 17294-2 (E 29) 2005-02	Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of 62 elements
DIN EN ISO 17852 (E 35) 2008-04	Water quality - Determination of mercury - Method using atomic fluorescence spectrometry
DIN EN ISO 17294-1 (E 36) 2007-02	Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 1: General guidelines

1.5 Jointly determinable substances

DIN 38407-F 27 2012-10	Determination of selected phenols in groundwater and seepage water, aqueous eluates and percolates
DIN 38407-F 30 2007-12	Determination of trihalogenmethanes in bathing water and pool water with headspace-gas chromatography
DIN 38407-F 39 2011-09	Water quality - Determination of selected polycyclic aromatic hydrocarbons (PAH) - Method using gas chromatography with mass spectrometric detection (GC-MS)
DIN 38407-F 43 2014-10	Determination of selected easily volatile organic compounds in water - Method using gas chromatography and mass spectrometry by static headspace technique (HS-GC-MS)

1.6 Gaseous components

DIN EN ISO 5814 (G 22) 2013-02	Water quality - Determination of dissolved oxygen - Electrochemical probe method
DIN ISO 17289 (G 25) 2014-12	Water quality - Determination of dissolved oxygen - Optical sensor method

1.7 Parameters characterising effects and substances

DIN 38409-H 1 1987-01	Determination of total dry residue, filtrate dry residue and residue on ignition
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
DIN 38409-H 10 1980-07	Determination of the settleable matter by mass concentration in water and waste water
DIN EN ISO 9562 (H 14) 2005-02	Water quality - Determination of adsorbable organically bound halogens (AOX)
DIN EN ISO 14402 (H 37) 1999-12	Water quality - Determination of phenol index by flow analysis (FIA and CFA)
DIN 38409-H 56 2009-06	Gravimetric determination of low volatile lipophilic substances after solvent extraction (<i>standard withdrawn</i>)
DIN ISO 11349 2015-12	Water quality - Determination of low-volatility lipophilic substances – Gravimetric method

1.8 Microbiological analysis

ISO 11731 1998-05	Water quality - Detection and enumeration of Legionella
ISO 14189 2013-11	Water quality - Enumeration of Clostridium perfringens - Method using membrane filtration
DIN EN ISO 6222 (K 5) 1999-07	Water quality - Enumeration of culturable micro-organisms - Colony count by inoculation in a nutrient agar culture medium (colony count at 22 °C and 36 °C)
DIN EN ISO 9308-2 (K 6) 2014-06	Water quality - Enumeration of Escherichia coli and coliform bacteria - Part 2: Most probable number method
DIN EN ISO 16266 (K 11) 2008-05	Water quality - Detection and enumeration of Pseudomonas aeruginosa - Membrane filtration method
DIN EN ISO 9308-1 (K 12) 2014-12	Water quality - Enumeration of Escherichia coli and coliform bacteria - Part 1: Membrane filtration method for waters with low bacterial background flora
DIN EN ISO 9308-3 (K 13) 1999-07	Water quality - Detection and enumeration of Escherichia coli and coliform bacteria in surface water and waste water – Part 3: Miniaturised method by inoculation in liquid medium (MPN method)
DIN EN ISO 7899-2 (K 15) 2000-11	Water quality - Detection and enumeration of intestinal enterococci - Part 2: Membrane filtration method
DIN EN ISO 11731-2 (K 22) 2008-06	Water quality - Detection and enumeration of Legionella - Part 2: Direct membrane filtration method with low bacterial counts
TrinkwV 2001 Annex 5 I d) bb) 2001	Quantitative determination of culturable microorganisms Colony count by inoculation in a nutrient agar culture medium (colony count at 20 °C and 36 °C)
TrinkwV 2001 Annex 5 I e) 2001	Detection of Clostridium perfringens by membrane filtration: (mCP method) at (44 ± 1) °C over (21 ± 3) hours
Pseudalert® /Quanti-Tray®	Determination of Pseudomonas aeruginosa using the Pseudalert/Quanti-Tray method
Enterolert®-DW	Determination of enterococci using the Enterolert-DW method

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AA-HuK-112 2014-05	Determination of cultivable microorganisms in aqueous samples - Pour plate technique - Surface plating technique
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1.9 Test methods with aquatic organisms

DIN EN ISO 11348-2 (L 52) 2009-05	Water quality - Determination of the inhibitory effect of water samples on the light emission of <i>Vibrio fischeri</i> (Luminescent bacteria test) - Part 2: Method using liquid-dried bacteria
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1.10 Selected quick tests with finished reagents

Hach Lange GmbH Ammonium cuvette test LCK 304 2000-02	Ammonium cuvette test 0.015 - 2 mg/l NH ₄ -N
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Hach Lange GmbH Ammonium cuvette test LCK 305 2000-02	Ammonium cuvette test 1.0 - 12 mg/l NH ₄ -N
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Hach Lange GmbH Chromium (III and VI) cuvette test LCK 313 2004-03	Chromium (III and VI) cuvette test 0.03 - 1.0 mg/l (Deviation: <i>Measurement range extension chromium (III and VI) via LCS 313 chromium trace; measuring range 0.005 - 0.25 mg/l</i>)
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Hach Lange GmbH Chlorine/ozone/chlorine dioxide cuvette test LCK 310 2011-02	Chlorine/ozone/chlorine dioxide cuvette test 0.05 - 2.00 mg/L Cl ₂
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Hach Lange GmbH COD cuvette test LCI 400 2003-05	COD cuvette test – ISO 15705, 0-1000 mg/L O ₂
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Annex to the accreditation certificate D-PL-14055-01-01

Hach Lange GmbH
COD cuvette test
LCI 500
2003-05
COD cuvette test - ISO 15705, 0-150 mg/L O₂

Hach Lange GmbH
Chloride cuvette test
LCK 311
1990-06
Chloride cuvette test 1-70 mg/L / 70-1000 mg/L Cl

Hach Lange GmbH
Sulphate cuvette test
LCK 153
1990-06
Sulphate cuvette test 40-150 mg/L SO₄

Hach Lange GmbH
Sulphide cuvette test
LCK 653
2004-07
Sulphide cuvette test 0.1-2.0 mg/L S²⁻

Hach Lange GmbH
Sulphite cuvette test
LCK 654
2007-01
Sulphite cuvette test 0.1-5.0 mg/L SO₃

Hach Lange GmbH
Phosphate (ortho/total) cuvette test
LCK 349
2013-06
Phosphate (ortho/total) cuvette test 0.05-1.5 mg/L PO₄-P

Hach Lange GmbH
Acid capacity - KS 4.3, cuvette test
LCK 362
2001-06
Acid capacity - KS 4.3, cuvette test 0.5-8.0 mmol/L

Hach Lange GmbH
Formaldehyde cuvette test
LCK 325
1994-07
Formaldehyde cuvette test 0.5 - 10 mg/L H₂CO

2 Test methods in accordance with the Drinking Water Ordinance - TrinkwV 2001 -

Method	Title
DIN EN ISO 5667-01 (A 4) 2007-04	Water quality - Sampling - Part 1: Guidance on the design of sampling programmes and sampling techniques
DIN ISO 5667-5 (A 14) 2011-02	Water quality - Sampling - Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems
DIN EN ISO 5667-3 (A 21) 2013-03	Water quality - Sampling - Part 3: Preservation and handling of water samples
DIN EN ISO 19458 (K 19) 2006-12	Water quality - Sampling for microbiological analysis
DIN 38402-A 12 1985-06	Sampling from barrages and lakes
DIN 38402-A 13 1985-12	Sampling from aquifers
DIN 38402-A 15 2010-04	Sampling from running waters
DIN 38402-A 18 1991-05	Sampling of water from mineral springs and spas
DVGW W112 2011-10	Principles of groundwater sampling from groundwater monitoring wells
Bundesgesundheitsblatt - Gesundheitsforschung Gesundheitsschutz 2004 47:296-300	Recommendation of the Federal Environment Agency: Assessment of drinking water quality with respect to the parameters lead, copper and nickel

APPENDIX 1: MICROBIOLOGICAL PARAMETERS

PART I: General requirements for drinking water

Seq no.	Parameter	Method
1	Escherichia coli (E. coli)	DIN EN ISO 9308-1 2014-12 With Colilert®-18/Quanti-Tray®
2	Enterococci	DIN EN ISO 7899-2 (K 15) 2000-11 Enterolert®-DW

PART II: Requirements for drinking water intended for transfer in sealed containers

Seq no.	Parameter	Method
1	Escherichia coli (E. coli)	DIN EN ISO 9308-1 2014-12 With Colilert®-18/Quanti-Tray®
2	Enterococci	DIN EN ISO 7899-2 (K 15) 2000-11 Enterolert®-DW
3	Pseudomonas aeruginosa	DIN EN ISO 16266 (K 11) 2008-05 Pseudalert® /Quanti-Tray®

APPENDIX 2: CHEMICAL PARAMETERS
PART I: Chemical parameters whose concentration does not usually increase in the distribution network, including the drinking water installation

Seq no.	Parameter	Method
1	Acrylamide	Not used
2	Benzene	DIN 38407-F 43 2014-10
3	Boron	DIN EN ISO 17294-2 (E 29) 2005-02
4	Bromate	DIN EN ISO 15061 (D 34) 2001-12
5	Chromium	DIN EN ISO 17294-2 (E 29) 2005-02
6	Cyanide	DIN EN ISO 14403-2 (D 3) 2012-10
7	1,2-dichloroethane	DIN 38407-F 43 2014-10
8	Fluoride	DIN EN ISO 10304-1 (D 20) 2009-07
9	Nitrate	DIN EN ISO 10304-1 (D 20) 2009-07
10	Plant protection product active ingredients and biocidal product active ingredients	Not used
11	Plant protection product active ingredients and biocidal product active ingredients total	Not used
12	Mercury	DIN EN ISO 17852 (E 35) 2008-04
13	Selenium	DIN EN ISO 17294-2 (E 29) 2005-02
14	Tetrachloroethene and trichloroethylene	DIN 38407-F 43 2014-10
15	Uranium	DIN EN ISO 17294-2 (E 29) 2005-02

PART II: Chemical parameters whose concentration may increase in the distribution network, including the drinking water installation

Seq no.	Parameter	Method
1	Antimony	DIN EN ISO 17294-2 (E 29) 2005-02
2	Arsenic	DIN EN ISO 17294-2 (E 29) 2005-02
3	Benzo[a]pyrene	DIN 38407-F 39 2011-09
4	Lead	DIN EN ISO 17294-2 (E 29) 2005-02
5	Cadmium	DIN EN ISO 17294-2 (E 29) 2005-02
6	Epichlorohydrin	DIN EN 14207 (P 9) 2003-09
7	Copper	DIN EN ISO 17294-2 (E 29) 2005-02
8	Nickel	DIN EN ISO 17294-2 (E 29) 2005-02
9	Nitrite	DIN EN ISO 10304-1 (D 20) 2009-07
10	Polycyclic aromatic hydrocarbons	DIN 38407-F 39 2011-09
11	Trihalomethanes	DIN 38407-F 43 2014-10
12	Vinyl chloride	DIN 38407-F 43 2014-10

APPENDIX 3: INDICATOR PARAMETERS

Part I: General indicator parameters

Seq no.	Parameter	Method
1	Aluminium	DIN EN ISO 17294-2 (E 29) 2005-02
2	Ammonia	DIN EN ISO 11732 (E 23) 2005-05
3	Chloride	DIN EN ISO 10304-1 (D 20) 2009-07
4	Clostridium perfringens (including spores)	TrinkwV 2001 Annex 5 I e) ISO 14189 2013-11
5	Coliform bacteria	DIN EN ISO 9308-1 2014-12 With Colilert®-18/Quanti-Tray®
6	Iron	DIN EN ISO 17294-2 (E 29) 2005-02
7	Colouring (spectral absorption coefficient Hg 436 nm)	DIN EN ISO 7887 2012-04
8	Odour (as TON)	DEV B1/2 Part a 1971
9	Taste	DEV B1/2 Part a 1971
10	Colony count at 22 °C	DIN EN ISO 6222 (K 5) 1999-07 TrinkwV 2001 Annex 5 I d) bb)
11	Colony count at 36 °C	DIN EN ISO 6222 (K 5) 1999-07 TrinkwV 2001 Annex 5 I d) bb)
12	Electrical conductivity	DIN EN 27888 (C 8) 1993-11
13	Manganese	DIN EN ISO 17294-2 (E 29) 2005-02
14	Sodium	DIN EN ISO 17294-2 (E 29) 2005-02
15	Organically bound carbon (TOC)	DIN EN 1484 (H 3) 1997-08
16	Oxidisability	DIN EN ISO 8467 (H 5) 1995-05
17	Sulphate	DIN EN ISO 10304-1 (D 20) 2009-07
18	Turbidity	DIN EN ISO 7027 (C 2) 2000-04
19	Hydrogen ion concentration	DIN EN ISO 10523 (C 5) 2012-04
20	Calcite dissolving capacity	DIN 38404-C 10 2012-12

Part II: Specific requirements for drinking water in systems in the drinking water installation

Parameter	Method
Legionella spec.	ISO 11731 1998-05; DIN EN ISO 11731-2 (K 22) 2008-06; UBA recommendation 2012-08

APPENDIX 3a: Requirements for drinking water with regard to radioactive substances

Not used

**Parameters not included in Annexes 1 to 3 of the 2001 Drinking Water Regulation
 Additional periodic testing**

Parameter	Method is requested
Calcium	DIN EN ISO 17294-2 (E 29) 2005-02
Potassium	DIN EN ISO 17294-2 (E 29) 2005-02
Magnesium	DIN EN ISO 17294-2 (E 29) 2005-02
Acid capacity	DIN 38409-H 7 2005-12
Phosphate	Not used

The accreditation does not replace the recognition or approval procedure of the competent authority pursuant to § 15 (4) TrinkwV.

**3 Test method list for SPECIALIST MODULE FOR WATER
 Revised: LAWA of 03.09.2013**
Section 1: Sampling and general parameters

Parameter	Method	Was	Sur	Raw
Sampling of waste water	DIN 38402-A 11: 1995-12	☐		
	DIN 38402-A 11: 2009-02	☒		
Sampling from running waters	DIN 38402-A 15: 1986-07		☐	
	DIN 38402-A 15: 2010-04		☒	
Sampling from aquifers	DIN 38402-A 13: 1985-12			☒
Sampling from barrages and lakes	DIN 38402-A 12: 1985-06		☒	
Homogenisation of samples	DIN 38402-A 30: 1998-07	☒	☒	
Temperature	DIN 38404-C 4: 1976-12	☒	☒	☒
pH value	DIN 38404-C 5: 1984-01	☐	☐	☐
	DIN 38404-C 5: 2009-07	☒	☒	☒
Conductivity (25 °C)	DIN EN 27888: 1993-11 (C 8)	☒	☒	☒
Odour	DIN EN 1622: 2006-10 (B 3) Annex C	☒	☒	☒
Colouring	DIN EN ISO 7887: 1994-12 (C 1) Section 2	☒	☒	☒
Turbidity	DIN EN ISO 7027: 2000-04 (C 2)	☒	☒	☒
Oxygen	DIN EN 25814: 1992-11 (G 22)		☒	☒
Redox potential	DIN 38404-C 6: 1984-05			☒

Section 2: Photometry, ion chromatography, titration

Parameter	Method	Was	Sur	Raw
UV absorption at 254 nm (SAC 254)	DIN 38404-C 3: 2005-07		☒	☒
UV absorption at 436 nm (SAC 436)	DIN EN ISO 7887: 1994-12 (C 1)		☒	☒

Parameter	Method	Was	Sur	Raw
Ammonium nitrogen	DIN EN ISO 11732: 1997-09 (E 23)	☐	☐	☐
	DIN EN ISO 11732: 2005-05 (E 23)	☒	☒	☒
	DIN 38406-E 5: 1983-10	☐	☐	☐
	DIN EN ISO 14911: 1999-12 (E 34)	☐	☐	☐
Nitrite nitrogen	DIN EN 26777: 1993-04 (D 10)	☒	☒	☒
	DIN EN ISO 10304-1: 1995-04 (D 19)	☐	☐	☐
	DIN EN ISO 10304-1: 2009-07 (D 20)	☒	☒	☒
	DIN EN ISO 10304-2: 1996-11 (D 20)	☐	☐	☐
	DIN EN ISO 13395: 1996-12 (D 28)	☐	☐	☐
Nitrate nitrogen	DIN EN ISO 10304-1: 1995-04 (D 19)	☐	☐	☐
	DIN EN ISO 10304-1: 2009-07 (D 20)	☒	☒	☒
	DIN EN ISO 10304-2: 1996-11 (D 20)	☐	☐	☐
	DIN EN ISO 13395: 1996-12 (D 28)	☐	☐	☐
	DIN 38405-9-2 / 9-3: 1979-05	☐	☐	☐
	DIN 38405-D 29: 1994-11	☐	☐	☐
Total phosphorus	DIN EN 1189: 1996-12 (D 11)	☐	☐	☐
	DIN EN ISO 6878: 2004-09 (D 11)	☐	☐	☐
	DIN EN ISO 15681-1: 2005-05 (D 45)	☐	☐	☐
	DIN EN ISO 15681-2: 2005-05 (D 46)	☐	☐	☐
Orthophosphate	DIN EN ISO 10304-1: 1995-04 (D 19)	☐	☐	☐
	DIN EN ISO 10304-1: 2009-07 (D 20)	☐	☒	☒
	DIN EN 1189: 1996-12 (D 11)	☐	☐	☐
	DIN EN ISO 6878: 2004-09 (D 11)	☐	☐	☐
	DIN EN ISO 15681-1: 2005-05 (D 45)	☐	☐	☐
	DIN EN ISO 15681-2: 2005-05 (D 46)	☐	☐	☐
Fluoride (dissolved and total)	DIN 38405-D 4: 1985-07	☒	☐	☐
	DIN EN ISO 10304-1: 1995-04 (D 19)	☐	☐	☐
	DIN EN ISO 10304-1: 2009-07 (D 20)	☐	☐	☒
Chloride	DIN 38405-D 1: 1985-12	☐	☐	☐
	DIN EN ISO 10304-1: 1995-04 (D 19)	☐	☐	☐
	DIN EN ISO 10304-1: 2009-07 (D 20)	☒	☒	☒
	DIN EN ISO 10304-2: 1996-11 (D 20)	☐	☐	☐
	DIN EN ISO 10304-4: 1999-07 (D 25)	☐	☐	☐
	DIN EN ISO 15682: 2002-01 (D 31)	☐	☐	☐

Parameter	Method	Was	Sur	Raw
Sulphate	DIN EN ISO 10304-1: 1995-04 (D 19)	☐	☐	☐
	DIN EN ISO 10304-1: 2009-07 (D 20)	☒	☒	☒
	DIN EN ISO 10304-2: 1996-11 (D 20)	☐	☐	☐
	DIN 38405-D 5: 1985-01	☐	☐	☐
Cyanide (readily liberated)	DIN 38405-D 13-2: 1981-02	☒	☐	☐
	DIN 38405-D 14-2: 1988-12	☐	☐	☐
	DIN EN ISO 14403: 2002-07 (D 6)	☒	☒	☒
	DIN 38405-D 7: 2002-04	☐	☐	☐
Cyanide (total)	DIN 38405-D 13-1: 1981-02	☐	☐	☐
	DIN 38405-D 14-1: 1988-12	☐	☐	☐
	DIN EN ISO 14403: 2002-07 (D 6)	☒	☒	☒
	DIN 38405-D 7: 2002-04	☐	☐	☐
Chromium VI	DIN 38405-D 24: 1987-05	☒	☒	☒
	DIN EN ISO 10304-3: 1997-11 (D 22), Section 5 (dissolved chromate)	☐	☐	☐
Sulphide (readily liberated)	DIN 38405-D 27: 1992-07	☒	☒	☒

Section 3: Elemental analysis

Parameter	Method	Was	Sur	Raw
Aluminium	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☒	☒
	DIN EN ISO 12020: 2000-05 (E 25)	☐	☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)	☐	☐	☐
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐
Arsenic	DIN EN ISO 11969: 1996-11 (D 18)	☐	☐	☐
	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)	☒	☒	☒
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐
Lead	DIN 38406-E 6: 1998-07	☐	☐	☐
	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☐	☐
	DIN 38406-E 16: 1990-03	☐	☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)	☒	☒	☒
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐

Parameter	Method	Was	Sur	Raw
Cadmium	DIN EN ISO 5961: 1995-05 (E 19)	☐	☐	☐
	DIN EN ISO 11885: 1998-04 (E 22)	☐		
	DIN EN ISO 11885: 2009-09 (E 22)	☒		
	DIN 38406-E 16: 1990-03		☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)	☒	☒	☒
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐
Calcium	DIN EN ISO 11885: 1998-04 (E 22)		☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)		☒	☒
	DIN 38406-E 3: 2002-03		☐	☐
	DIN EN ISO 7980: 2000-07 (E 3a)		☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)		☐	☐
	DIN EN ISO 14911: 1999-12 (E 34)		☐	☐
Chromium	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☒	☒
	DIN EN 1233: 1996-08 (E 10)	☐	☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)	☐	☐	☐
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐
Iron	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☒	☒
	DIN 38406-E 1: 1983-05	☐	☐	☐
	DIN 38406-E 32: 2000-05	☐	☐	☐
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐
Potassium	DIN 38406-E 13: 1992-07		☐	☐
	DIN EN ISO 11885: 1998-04 (E 22)		☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)		☒	☒
	DIN EN ISO 17294-2: 2005-02 (E 29)		☐	☐
	DIN EN ISO 14911: 1999-12 (E 34)		☐	☐
Copper	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☒	☒
	DIN 38406-E 7: 1991-09	☐	☐	☐
	DIN 38406-E 16: 1990-03	☐	☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)	☐	☐	☐
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐

Parameter	Method	Was	Sur	Raw
Manganese	DIN EN ISO 11885: 1998-04 (E 22)			☐
	DIN EN ISO 11885: 2009-09 (E 22)			☒
	DIN EN ISO 17294-2: 2005-02 (E 29)			☐
	DIN 38406-E 33: 2000-06			☐
	DIN EN ISO 15586: 2004-02 (E 4)			☐
	DIN EN ISO 14911: 1999-12 (E 34)			☐
Sodium	DIN 38406-E 14: 1992-07		☐	☐
	DIN EN ISO 11885: 1998-04 (E 22)		☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)		☒	☒
	DIN EN ISO 17294-2: 2005-02 (E 29)		☐	☐
	DIN EN ISO 14911: 1999-12 (E 34)		☐	☐
Nickel	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☒	☒
	DIN 38406-E 11: 1991-09	☐	☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)	☐	☐	☐
	DIN 38406-E 16: 1990-03	☐	☐	☐
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐
Mercury	DIN EN 1483: 1997-08 (E 12)	☒	☒	☒
	DIN EN 1483: 2007-07 (E 12)	☒	☒	☒
	DIN EN 12338: 1998-10 (E 31)	☐	☐	☐
	DIN EN 13506: 2002-04 (E 35)	☐	☐	☐
	DIN EN 17852: 2008-04 (E 35)	☒	☒	☒
Zinc	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☒	☒
	DIN 38406-E 8-1: 2004-10	☐	☐	☐
	DIN 38406-E 16: 1990-03	☐	☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)	☐	☐	☐
	DIN EN ISO 15586: 2004-02 (E 4)	☐	☐	☐
Boron	DIN EN ISO 11885: 1998-04 (E 22)			☐
	DIN EN ISO 11885: 2009-09 (E 22)			☒
	DIN 38405-D 17: 1981-03			☐
	DIN EN ISO 17294-2: 2005-02 (E 29)			☐

Parameter	Method	Was	Sur	Raw
Magnesium	DIN EN ISO 11885: 1998-04 (E 22)		☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)		☒	☒
	DIN 38406-E 3: 2002-03		☐	☐
	DIN EN ISO 7980: 2000-07 (E 3a)		☐	☐
	DIN EN ISO 17294-2: 2005-02 (E 29)		☐	☐
	DIN EN ISO 14911: 1999-12 (E 34)		☐	☐
Phosphorus	DIN EN ISO 17294-2: 2005-02 (E 29)	☐	☐	☐
	DIN EN ISO 11885: 1998-04 (E 22)	☐	☐	☐
	DIN EN ISO 11885: 2009-09 (E 22)	☒	☒	☒

Section 4/5: Group and sum parameters

Parameter	Method	Was	Sur	Raw
Biological oxygen demand (BOD ₅)	DIN EN 1899-1: 1998-05 (H 51)	☒		
	DIN EN 1899-2: 1998-05 (H 52)	☐	☐	
Chemical oxygen demand (COD)	DIN 38409-H 41: 1980-12	☒		
	DIN 38409-H 44: 1992-05	☐	☐	
	DIN ISO 15705: 2003-01 (H 45)	☒	☒	
Phenol index (with and without distillation)	DIN 38409-H 16: 1984-06	☐	☐	☐
	DIN EN ISO 14402: 1999-12 (H 37)	☒	☒	☒
Filterable solids	DIN 38409-H 2: 1987-03	☒	☒	
	DIN EN 872: 2005-04 (H 33)	☒	☒	
Acid and base capacity	DIN 38409-H 7: 2005-12		☒	☒
Total organic carbon (TOC)	DIN EN 1484: 1997-08 (H 3)	☒	☒	
Dissolved organic carbon (DOC)	DIN EN 1484: 1997-08 (H 3)			☒
Total bound nitrogen (TN _b)	DIN ENV 12260: 1996-06 (H 34)	☐	☐	
	DIN EN 12260: 2003-12 (H 34)	☒	☒	
	DIN EN ISO 11905-1: 1998-08 (H 36)	☐	☐	
Adsorbable organic halogens (AOX)	DIN EN 1485: 1996-11 (H 14)	☒	☒	☒
	DIN EN ISO 9562: 2005-02 (H 14)	☒	☒	☒
	DIN 38409-H 22: 2001-02	☒	☒	☒

Section 6: Gas chromatographic methods

Parameter	Method	Was	Sur	Raw
Volatile halogenated hydrocarbons (VOC)	DIN EN ISO 10301: 1997-08 (F 4)*	☒	☒	☒
	DIN EN ISO 15680: 2004-04 (F 19)	☐	☐	☐

Parameter	Method	Was	Sur	Raw
Benzene and derivatives (BTEX)	DIN 38407-F 9: 1991-05*	☒	☒	☒
	DIN EN ISO 15680: 2004-04 (F 19)	☐	☐	☐
Organochlorine insecticides (OCP)	DIN EN ISO 6468: 1997-02 (F 1)*	☐	☐	☐
	DIN 38407-F 2: 1993-02*	☐	☒	☒
Polychlorinated biphenyls (PCB)	DIN EN ISO 6468: 1997-02 (F 1)*	☐	☐	☐
	DIN 38407-F 2: 1993-02*	☐	☒	☒
	DIN 38407-F 3: 1998-07	☐	☒	☒
Mono, dichlorobenzenes	DIN EN ISO 10301: 1997-08 (F 4)*	☐	☒	☒
	DIN EN ISO 15680: 2004-04 (F 19)	☐	☐	☐
Tri to hexachlorobenzene	DIN EN ISO 6468: 1997-02 (F 1)*	☐	☐	☐
	DIN 38407-F 2: 1993-02*	☒	☒	☒
Chlorophenols	DIN EN 12673: 1999-05 (F 15)	☐	☒	☒
Organophosphorus and organic nitrogen compounds	DIN EN ISO 10695: 2000-11 (F 6) *	☐	☐	☐
Polycyclic aromatic hydrocarbons (PAH)**	DIN 38407-F 39: 2011-09	☒	☒	☒
Hydrocarbon index	DIN EN ISO 9377-2: 2001-07 (H 53)	☒	☒	☒
* Mass spectrometric detection allowed				
** Section 6 is also fully met when PAHs are analysed using a method in section 7				

Section 7: HPLC methods

Not used

Section 8: Microbiological methods

Not used

Section 9.1: Biological methods, bio-assays (part 1)

Parameter	Method	Was	Sur	Raw
Fish egg test	DIN 38415-T 6: 2003-08	☐	☐	☐
	DIN EN ISO 15088: 2009-08 (T 6)	☐	☐	☐
Luminescent bacteria inhibition test	DIN 38412-L 34: 1997-07 in conjunction with DIN 38412-L 34-1: 1993-10	☐	☐	☐
	DIN EN ISO 11348-2: 1999-04 (L 34-2)	☐	☐	☐
	DIN EN ISO 11348-2: 2009-05 (L 52)	☒	☐	☐
	DIN EN ISO 11348-1: 2009-05 (L 51)	☐	☐	☐

Section 9.2: Biological methods, bio-assays (part 2)

Not used

4 SPECIALIST MODULE FOR SOIL AND CONTAMINATED SITES
Revised: LABO dated 16.08.2012
Test area 1: Solids
Section 1.1: Sampling and on-site examination

Not used

Section 1.2: Laboratory - Analysis of inorganic parameters

Basic parameters and sample preparation			
Test parameters	Methods/notes	Method	
Sample preparation and reconditioning		DIN 19747: 2009	☒
Dry matter		DIN ISO 11465: 1996	☒
		DIN EN 14346: 2007	☒
Organic carbon and total carbon after dry combustion (TOC)	Air-dried soil samples	DIN ISO 10694: 1996	☒
		DIN EN 13137: 2001	☒
		DIN EN 15936: 2012	☒
pH value (CaCl ₂)		DIN ISO 10390: 2005	☒
Gross density - optional		DIN ISO 11272: 2001	☒
Particle size distribution - optional	Pipette analysis	DIN ISO 11277: 2002	☒
	Hydrometer method	DIN 18123: 2011 with LAGA PN98	☐

Analysis of inorganic parameters			
Test parameters	Methods/notes	Method	
Aqua regia extract	Thermal, open vessel	DIN ISO 11466: 1997	☒
	Microwave digestion	DIN EN 13657: 2003	☒
Ammonium nitrate extract		DIN 19730: 2009	☒
Alkaline digestion method - optional	Metaborate melt digestion for chromium(VI) analysis	DIN EN 15192: 2007	☒
Extraction for determination of thallium - optional	HNO ₃ , H ₂ O ₂	DIN ISO 20279: 2006	☒
Arsenic (As)	ICP-OES	DIN ISO 22036: 2009	☒
Antimony (Sb)	ICP-MS	DIN EN ISO 17294-2: 2005	☐

Analysis of inorganic parameters			
Test parameters	Methods/notes	Method	
	ET-AAS or hydride AAS	DIN ISO 20280: 2010	☐
Cadmium (Cd)	ET-AAS	DIN ISO 11047: 2003	☐
Chromium (Cr), total			
Cobalt (Co)	ICP-OES	DIN ISO 22036: 2009	☒
Copper (Cu)			
Nickel (Ni)	ICP-MS	DIN EN ISO 17294-2: 2005	☐
Lead (Pb)			
Zinc (Zn)			
Mercury (Hg)	AAS	DIN EN 1483: 2007	☒
	Cold vapour AAS or cold vapour AFS	DIN ISO 16772: 2005	☒
Cyanide		DIN ISO 17380: 2011	☒
		DIN ISO 11262: 2012	☐
Chromium(VI) - optional	IC with photometric detection	DIN EN 15192: 2007	☒
Molybdenum (Mo)	ICP-OES	DIN ISO 22036: 2009	☒
Vanadium (V) - optional	ICP-MS	DIN EN ISO 17294-2: 2005	☐
Selenium (Se) - optional	ICP-OES	DIN ISO 22036: 2009	☒
	ICP-MS	DIN EN ISO 17294-2: 2005	☐
	ET-AAS or hydride AAS	DIN ISO 20280: 2010	☐
Thallium (Tl) from the HNO ₃ /H ₂ O ₂ -extract - optional	ET-AAS	DIN ISO 20279: 2006	☐
	ICP-OES	DIN ISO 22036: 2009	☒
	ICP-MS	DIN EN ISO 17294-2: 2005	☐
Uranium (U)	ICP-OES	DIN ISO 22036: 2009	☒
Tungsten (W) - optional	ICP-MS	DIN EN ISO 17294-2: 2005	☐

Section 1.3: Laboratory - Analysis of organic parameters

Basic parameters and sample preparation			
Test parameters	Methods/notes	Method	
Sample preparation and reconditioning		DIN 19747: 2009	☒
Dry matter		DIN ISO 11465: 1996	☒
		DIN EN 14346: 2007	☒
Organic carbon and total carbon after dry combustion (TOC)	Air-dried soil samples	DIN ISO 10694: 1996	☒
		DIN EN 13137: 2001	☒
		DIN EN 15936: 2012	☒
pH value (CaCl ₂)		DIN ISO 10390: 2005	☒
Gross density - optional		DIN ISO 11272: 2001	☒

Test parameters	Methods/notes	Method	
Particle size distribution - optional	Pipette analysis	DIN ISO 11277: 2002	☒
	Hydrometer method	DIN 18123: 2011 with LAGA PN98	☐

Analysis of organic parameters			
Test parameters	Methods/notes	Method	
Polycyclic aromatic hydrocarbons (PAH) 16 PAH (EPA)	GC-MS	DIN ISO 18287: 2006	☒
	HPLC-UV/F Acenaphthylene cannot be determined by fluorescence detector	DIN ISO 13877: 2000	☐
		DIN 38414-23: 2002	☐
Hexachlorobenzene	GC-ECD, GC-MS	DIN ISO 10382: 2006	☒
Pentachlorophenol	GC-ECD, GC-MS	DIN ISO 14154: 2005	☒
Aldrin, DDT, HCH mixture	GC-ECD, GC-MS	DIN ISO 10382: 2003	☒
		DIN EN 15308: 2008	☒
Polychlorinated biphenyls (PCB)	GC-ECD, GC-MS Extraction with acetone/petroleum ether or Soxhlet extraction The type of summation must be indicated (PCB6/PCB7)	DIN ISO 10382: 2003	☒
		DIN EN 15308: 2008	☒
		DIN 38414-20: 1996	☒
Typical explosive compounds (HPLC) - optional	Extraction with methanol or acetonitrile and quantification using HPLC-UV/DAD	E DIN ISO 11916-1: 2011	☐
Typical explosive compounds (GC) - optional	Extraction with methanol. Dissolution in toluene and quantification using GC-ECD or GC-MS	E DIN ISO 11916-2: 2011	☐
Petroleum hydrocarbons (C ₁₀ -C ₄₀) - optional	GC-FID	DIN ISO 16703: 2005	☒
		LAGA KW/04: 2009	☒
BTEX aromatic compounds, VOC - optional	Headspace, GC	DIN ISO 22155: 2006	☒

Test area 1.4: Analysis - Dioxins and furans

Not used

Test area 2: Eluates and percolates, aqueous media

Section 2.1: Sampling and on-site examination

Sampling			
Test parameters	Methods/notes	Method	
Sampling programmes and sampling techniques		DIN EN ISO 5667-1: 2007	☒
Sampling of groundwater	AQS Data Sheet P 8/2: 1996	ISO 5667-11: 2009 DIN 38402-13: 1985 DVGW Work Sheet S W 112: 2011	☒
Sampling of seepage water		No standardised method currently available Where applicable E-DWA-M 905: 2008	☒
Sampling of surface water (running waters)	AQS Data Sheet P 8/3: 1998	DIN 38402-15: 2010	☒
Sampling of surface water (barrages and lakes)		DIN 38402-12: 1985	☒

On-site testing			
Test parameters	Methods/notes	Method	
Colouring		DIN EN ISO 7887: 2012	☒
Turbidity		DIN EN ISO 7027: 2000	☒
Odour		DEV B1/2 1971	☒
Temperature		DIN 38404-4: 1976	☒
pH value		DIN EN ISO 10523: 2012	☒
Oxygen content		DIN EN 25814: 1992	☒
Electrical conductivity		DIN EN 27888: 1993	☒
Redox potential		DIN 38404-6: 1984	☒
Sample storage, sample pretreatment, sample transport		DIN EN ISO 5667-3: 2004	☒

Section 2.2: Laboratory - Analysis of eluates/percolates for inorganic parameters

Eluates/percolates			
Test parameters	Methods/notes	Method	
Batch test - Elution of inorganic substances		DIN 19529: 2009	☒

Eluates/percolates			
Test parameters	Methods/notes	Method	
Batch test - Elution of organic substances		DIN 19527: 2012	☒
Batch test - Elution of inorganic substances - optional		DIN EN 12457-4: 2003	☒
Percolation method for organic and inorganic substances - optional		DIN 19528: 2009	☒
Examination for absorption availability - optional		DIN 19738: 2004	☐

Analysis – Inorganic parameters			
Test parameters	Methods/notes	Method	
Antimony (Sb) Arsenic (As)	ICP-OES	DIN EN ISO 11885: 2009	☒
	ICP-OES	DIN ISO 22036: 2009	☐
	ICP-MS	DIN EN ISO 17294-2: 2005	☐
	ET-AAS or hydride AAS	DIN ISO 20280: 2010	☐
Lead (Pb) Cadmium (Cd) Chromium (Cr), total Cobalt (Co) Copper (Cu) Molybdenum (Mo) Nickel (Ni) Zinc (Zn)	ET-AAS	DIN EN ISO 15586: 2004	☐
	ICP-OES	DIN EN ISO 11885: 2009	☒
	ICP-OES	DIN ISO 22036: 2009	☐
	ICP-MS	DIN EN ISO 17294-2: 2005	☐
Mercury (Hg)	AAS	DIN EN 1483: 2007	☒
	Cold vapour AAS or cold vapour AFS	DIN ISO 16772: 2005	☐
Cyanide (CN-), total Cyanide, readily liberated	Spectrophotometry	DIN EN ISO 14403: 2002	☒
		DIN 38405-13: 2011	☒
		DIN EN ISO 17380: 2011	☐
Fluoride, chloride, sulphate	Ion chromatography	DIN EN ISO 10304-1:2009	☒
	Individual method	DIN 38405-1, -4, -5: 1985	☐

Analysis – Inorganic parameters			
Test parameters	Methods/notes	Method	
Vanadium (V) - optional	ET-AAS	DIN EN ISO 15586: 2004	☐
	ICP-OES	DIN EN ISO 11885: 2009	☒
	ICP-OES	DIN ISO 22036: 2009	☐
	ICP-MS	DIN EN ISO 17294-2: 2005	☐
Uranium (U) - optional	ICP-MS	DIN EN ISO 17294-2: 2005	☐
Tin (Sn) Thallium (Tl) Tungsten (W) - optional	ICP-OES	DIN EN ISO 11885: 2009	☒
	ICP-OES	DIN ISO 22036: 2009	☐
	ICP-MS	DIN EN ISO 17294-2: 2005	☐
Selenium (Se) - optional	ET-AAS	DIN EN ISO 15586: 2004	☐
	ICP-OES	DIN EN ISO 11885: 2009	☒
	ICP-OES	DIN ISO 22036: 2009	☐
	ICP-MS	DIN EN ISO 17294-2: 2005	☐
	ET-AAS or hydride AAS	DIN ISO 20280: 2010	☐
Chromium (Cr VI)	Spectrophotometry	DIN 38405-24: 1987	☒
	Ion chromatography	DIN EN ISO 10304-3: 1997	☐

Section 2.3: Laboratory - Analysis of eluates/percolates for organic parameters

Eluates/percolates			
Test parameters	Methods/notes	Method	
Batch test - Elution of inorganic substances		DIN 19529: 2009	☒
Batch test - Elution of organic substances		DIN 19527: 2012	☒
Batch test - Elution of inorganic substances - optional		DIN EN 12457-4: 2003	☒
Percolation method for organic and inorganic substances - optional		DIN 19528: 2009	☒
Examination for absorption availability - optional		DIN 19738: 2004	☐

Analysis – Organic parameters			
Test parameters	Methods/notes	Method	
Aromatics (BTEX)	Purge + trap / desorption, GC-MS	DIN EN ISO 15680: 2004	☐
	Liquid extraction and headspace, GC	DIN 38407-9: 1991	☒
	Headspace-SPME, GC-MS	DIN 38407-41: 2011	☐
Volatile halogenated hydrocarbons (VOC)	Purge + Trap/Desorption, GC-MS	DIN EN ISO 15680: 2004	☐
	Liquid extraction and headspace, GC	DIN EN ISO 10301: 1997	☒
	Headspace-SPME, GC-MS	DIN 38407-41: 2011	☐
Aldrin	GC-ECD, GC-MS	DIN EN ISO 6468: 1997	☐
		DIN 38407-2: 1993	☒
Dichlorodiphenyltrichloroethane (DDT)	GC-ECD, GC-MS	DIN EN ISO 6468: 1997	☐
		DIN 38407-2: 1993	☒
Chlorophenols	GC-ECD, GC-MS	DIN EN 12673: 1999	☒
Chlorobenzenes (Cl3-Cl6)	GC-ECD, GC-MS	DIN 38407-2: 1993	☒
	Liquid extraction, GC-ECD, GC-MS	DIN EN ISO 6468: 1997	☐
Chlorobenzenes (Cl1-Cl3)	Liquid extraction and headspace, GC-ECD, MS where applicable	DIN EN ISO 10301: 1997	☒
Polychlorinated biphenyls (PCB)	GC-ECD, GC-MS Type of summation (PCB6 / PCB7) must be specified	DIN 38407-2: 1993	☒
		DIN 38407-3: 1998	☒
16 PAH (EPA)	HPLC-F	DIN EN ISO 17993: 2004	☐
	GC-MS	DIN 38407-39: 2011	☒
Naphthalene	GC-FID, GC-MS	DIN EN ISO 15680: 2004	☐
		DIN 38407-9: 1991	☒
Petroleum hydrocarbons (MKW, C ₁₀ -C ₄₀)	GC-FID	DIN EN ISO 9377-2: 2001	☒
Typical explosive compounds (HPLC) - optional	HPLC / UV detection	DIN EN ISO 22478: 2006	☐
Typical explosive compounds (GC) - optional	Determination of selected nitroaromatic compounds using GC	DIN 38407-17: 1999	☐

Analysis – Organic parameters			
Test parameters	Methods/notes	Method	
Phenols - optional	GC-ECD, GC-MS	ISO 8165-2: 1999	☒
		DIN EN 12673: 1999	☒

Test area 3 - Soil gas, landfill gas
Section 3.1: Sampling and on-site examination

Not used

Section 3.2: Laboratory - Analysis of soil gas, landfill gas

Not used

5 Test method list for SPECIALIST MODULE FOR WASTE

Revised: LAGA, August 2012

Test area 1: Sewage sludge

Not used

Test area 2: Base

Not used

Test area 3: Biowaste

Not used

Test area 4: Waste oil, insulating liquid

	Sections/ Parameter	Basis/ Method	
		§ 5 AltöIV	
4.1	Sampling	§ 5 (2) AltöIV	☐
		DIN 51750-1 (03.83)	☐
		DIN 51750-1 (12.90)	☐
		DIN 51750-2 (03.84)	☐
		DIN 51750-2 (12.90)	☐
4.2	PCB and halogen (only in accordance with AltöIV)	§ 5 (2) AltöIV	

	Sections/ Parameter	Basis/ Method	
	PCB	DIN EN 12766-1 (11.00) in conjunction with DIN EN 12766-2 (12.01), method B	☒
	Total halogen (only in accordance with AltöIV)	Annex 2, No. 3 AltöIV	☒

Test area 5: Waste for deposition

	Sections/ Parameter	Basis/ Method	
		§ 8 (1, 3) and 5 DepV	
5.1	Sampling, sample preparation	Annex 4 No. 2 and No. 3.1.1 DepV	☒
5.2	Sample preparation, general parameters	Annex 4 No. 3 DepV	
	Digestion method (aqua regia)	DIN EN 13657 (01.03)	☒
	Preparation of eluates/percolates	Annex 4 No. 3.2.1 and 3.2.2 DepV	☒
	pH value of eluate	DIN 38404-5 (07.09)	☒
	Conductivity of eluate	DIN EN 27888 (C 8) (11.93)	☒
	Total dissolved solids	DIN EN 15216 (01.08)	☒
		DIN 38409-H 1 (01.87)	☒
		DIN 38409-H 2 (03.87)	☒
	Loss on ignition	DIN EN 15169 (05.07)	☒
	Cyanides, readily liberated (from eluate)	DIN 38405-14 (12.88)	☐
		DIN 38405-D 13 (04.11)	☐
		In waste containing sulphide: DIN ISO 17380 (05.06)	☒
		DIN EN ISO 14403 (D 6) (07.02)	☒
	Fluoride (from eluate)	DIN 38405-D 4 (07.85)	☐
		DIN EN ISO 10304-1 (D 20) (07.09)	☒
	Chloride (from eluate)	DIN EN ISO 10304-1 (D 20) (07.09)	☒
		DIN 38405-D 1 (12.85)	☐
		DIN EN ISO 15682 (D 31) (01.02)	☐
	Sulphate (from eluate)	DIN EN ISO 10304-1 (D 20) (07.09)	☒
		DIN 38405-D 5 (01.85)	☐
	Density	DIN 18125-2 (08.99)	☐
		DIN 18125-2 (03.11)	☒

	Sections/ Parameter	Basis/ Method	
	Gross calorific value	DIN EN 15170 (05.09)	☒
5.3	Elements	Annex 4 No. 3 DepV	
	Cadmium, chromium, copper, nickel, lead and zinc	DIN ISO 11047 (05.03)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 22036 (06.09)	☒
	Mercury	DIN EN 1483 (E 12) (07.07)	☒
		DIN EN 12338 (E 31) (10.98)	☐
		DIN EN ISO 17852 (E 35) (04.08)	☐
	Arsenic (from eluate)	DIN EN ISO 11969 (D 18) (11.96)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 22036 (06.09)	☒
		DIN EN ISO 15586 (E 4) (02.04)	☐
		DIN EN ISO 17294-2 (E 29) 02.05)	☐
	Lead (from eluate)	DIN EN ISO 15586 (E 4) (02.04)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 22036 (06.09)	☒
	Cadmium (from eluate)	DIN EN ISO 15586 (E 4) (02.04)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 22036 (06.09)	☒
	Copper (from eluate)	DIN EN ISO 15586 (E 4) (02.04)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 22036 (06.09)	☒
	Nickel (from eluate)	DIN EN ISO 15586 (E 4) (02.04)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 22036 (06.09)	☒
	Mercury (from eluate)	DIN EN 1483 (E 12) (07.07)	☒
		DIN EN ISO 17852 (E 35) (04.08)	☐

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	Sections/ Parameter	Basis/ Method	
	Zinc (from eluate)	DIN EN ISO 15586 (E 4) (02.04)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 22036 (06.09)	☒
	Barium (from eluate)	DIN ISO 22036 (06.09)	☒
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Chromium, total (from eluate)	DIN ISO 22036 (06.09)	☒
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN EN ISO 15586 (E 4) (02.04)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Molybdenum (from eluate)	DIN ISO 22036 (06.09)	☒
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Antimony (from eluate)	DIN ISO 22036 (06.09)	☒
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN EN ISO 15586 (E 4) (02.04)	☐
		DIN 38405-E 32 (05.00)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Selenium (from eluate)	DIN ISO 22036 (06.09)	☒
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
5.4	Group and sum parameters	Annex 4 No. 3 DepV	
	Total organic carbon (TOC)	DIN EN 13137 (12.01)	☒
	Dissolved organic carbon (DOC)	DIN EN 1484 (H 3) (08.97)	☒
	Extractable lipophilic substances in original substance	LAGA KW/04 (12.09)	☒
	Phenols (from eluate)	DIN 38409-H 16 (06.84)	☐
		DIN EN ISO 14402 (H 37) (12.99)	☒
	Petroleum hydrocarbons	DIN EN 14039 (01.05) in conjunction with LAGA KW/04 (12.09)	☒
5.5	Individual organic substances	Annex 4 No. 3 DepV	
	Polycyclic aromatic hydrocarbons (PAH)	DIN ISO 18287 (05.06)	☒
	Benzene and derivatives (BTEX)	DIN 38407-F 9 (05.91)	☒

	Sections/ Parameter	Basis/ Method	
		Handbuch Altlasten HLUG, Volume 7 Part 4 (08.00)	☐
	Polychlorinated biphenyls (PCB)	DIN EN 15308 (05.08)	☒
5.6	Biodegradability	Annex 4 No. 3 DepV	
	Breathability over 4 days (AT ₄)	Annex 4 No. 3.3.1 DepV	☒
	Gas formation rate in fermentation test over 21 days (GB ₂₁)	Annex 4 No. 3.3.2 DepV	☐

Test area 6: Wood waste

	Sections/ Parameter	Basis/ Method	
		§ 6 (6) AltholzV	
6.1	Sampling, sample preparation	Annex IV No. 1.1-1.3, 1.4.1 AltholzV	
	Sampling	Annex IV No. 1.1, AltholzV	☐
	Preparation of laboratory sample	Annex IV No. 1.2 AltholzV with: DIN 51701-3 (08.85)	☐
	Sample preparation	Annex IV No. 1.3	☐
	Moisture content	DIN 52183 (11.77)	☐
6.2	Metals	Annex IV No. 1.4.3 AltholzV	
	Aqua regia digestion	E DIN EN 13657 (10.99)	☐
		DIN EN 13657 (01.03)	☒
	Arsenic (from aqua regia digestion)	DIN EN ISO 11969 (D 18) (11.96)	☐
		DIN ISO 11047 (05.03)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Lead (from aqua regia digestion)	DIN 38406-E 6 (07.98)	☐
		DIN EN ISO 11885 (04.98)	☐
		DIN ISO 11047 (05.98)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 11047 (05.03)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Cadmium (from aqua regia digestion)	DIN EN ISO 5961 (E 19) (05.95)	☐
		DIN EN ISO 11885 (04.98)	☐
		DIN ISO 11047 (06.95)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 11047 (05.03)	☐

	Sections/ Parameter	Basis/ Method	
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Chromium (from aqua regia digestion)	DIN EN 1233 (E 10) (08.96)	☐
		DIN EN ISO 11885 (04.98)	☐
		DIN ISO 11047 (06.95)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 11047 (05.03)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Copper (from aqua regia digestion)	DIN 38406-E 7 (09.91)	☐
		DIN EN ISO 11885 (04.98)	☐
		DIN ISO 11047 (06.95)	☐
		DIN EN ISO 11885 (E 22) (09.09)	☒
		DIN ISO 11047 (05.03)	☐
		DIN EN ISO 17294-2 (E 29) (02.05)	☐
	Mercury (from aqua regia digestion)	DIN EN 1483 (E 12) (08.97)	☐
		DIN EN 12338 (E 31) (10.98)	☐
		DIN EN ISO 17852 (E 35) (04.08)	☐
		DIN EN 1483 (E 12) (07.07)	☒
6.3	Halogen	Annex IV No. 1.4.2 AltholzV	
	Fluorine	DIN 51727 (06.01) with DIN EN ISO 10304-1 (04.95)	☐
		DIN 51727 (11.11) mit DIN EN ISO 10304-1 (D 20) (07.09)	☒
	Chlorine	DIN 51727 (06.01) with DIN EN ISO 10304-1 (04.95)	☐
		DIN 51727 (11.11) mit DIN EN ISO 10304-1 (D 20) (07.09)	☒
6.4	Organic parameters	Annex IV No. 1.4.4 and 1.4.5 AltholzV	
	Pentachlorophenol (PCP)	Annex IV No. 1.4.4 AltholzV	☒
	Polychlorinated biphenyls (PCB)	Annex IV No. 1.4.5 AltholzV with DIN 38414-S 20 (01.96)	☒

6 Analysis of waste for deposition in accordance with the German Landfill Ordinance, Annex 4

DepV, Annex 4	Parameter	§ 8 (1, 3) and 5 DepV	
2	Sampling	LAGA PN 98 (December 2001)	☒
3	Determination of total content in solid and elutable fraction		
3.1	Determination of total content in solid		
3.1.1	Sample preparation	DIN 19747 (July 2009)	☒
3.1.2	Digestion method (aqua regia)	DIN EN 13657 (January 2003)	☒
3.1.3	Organic portion of the dry residue of the original substance		
3.1.3.1	Loss on ignition	DIN EN 15169 (May 2007)	☒
3.1.3.2	TOC (total organic carbon)	DIN EN 13137 (December 2001)	☒
3.1.4	BTEX (benzene, toluene, ethylbenzene, o, m, p-xylene, styrene, cumene)	DIN 38407-F 9 (May 1991)	☒
		Handbuch Altlasten HLUG, Volume 7 Part 4 (2000)	☐
3.1.5	PCB (polychlorinated biphenyls - sum of the 7 PCB congeners, PCB 28, 52, 101, 118, 138, 153, 180)	DIN EN 15308 (May 2008)	☒
3.1.6	Petroleum hydrocarbons (C 10 to C 40)	DIN EN 14039 (January 2005) in conjunction with LAGA KW/04 (December 2009)	☒
3.1.7	PAH (polycyclic aromatic hydrocarbons)	DIN ISO 18287 (May 2006)	☒
3.1.8	Density	DIN 18125-2 (March 2011)	☒
3.1.9	Gross calorific value	DIN EN 15170 (May 2009)	☒
03/01/2010	Cadmium, chromium, copper, nickel, lead, zinc	DIN ISO 11047 (May 2003)	☐
		DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
3.1.11	Mercury	DIN EN ISO 12846 (E 12) (August 2012)	☒
		DIN EN ISO 17852 (E 35) (April 2008)	☐
3.1.12	Extractable lipophilic substances	LAGA KW/04 (December 2009)	☒

DepV, Annex 4	Parameter	§ 8 (1, 3) and 5 DepV	
3.2	Determination of contents in eluate		
3.2.1	Eluate preparation		
3.2.1.1	Eluate preparation with a liquid to solid ration of 10/1	DIN EN 12457-4 (January 2003)	☒
3.2.1.2	Eluate preparation each with constant pH 4 and 11 / acid neutralisation capacity	LAGA Guideline EW 98 (2002)	☒
3.2.2	Up-flow percolation test	DIN 19528 (January 2009)	☒
		DIN CEN/TS 14405 (September 2004)	☒
3.2.3	pH value of eluate	DIN 38404-5 (July 2009)	☒
3.2.4	DOC (dissolved organic carbon)		
3.2.4.1	DOC	DIN EN 1484 (H 3) (August 1997)	☒
3.2.4.2	DOC at a pH between 7.5 and 8	LAGA Guideline EW 98 (2002)	☒
3.2.5	Phenols	DIN 38409-H 16 (June 1984)	☐
		DIN EN ISO 14402 (H 37) (December 1999)	☒
3.2.6	Arsenic	DIN EN ISO 11969 (D 18) (November 1996)	☐
		DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
		DIN EN ISO 15586 (E 4) (February 2004)	☐
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
3.2.7	Lead	DIN EN ISO 15586 (E 4) (February 2004)	☐
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
		DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒

DepV, Annex 4	Parameter	§ 8 (1, 3) and 5 DepV	
3.2.8	Cadmium	DIN EN ISO 15586 (E 4) (February 2004)	☐
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
		DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
3.2.9	Copper	DIN EN ISO 15586 (E 4) (February 2004)	☐
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
		DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
3.2.10	Nickel	DIN EN ISO 15586 (E 4) (February 2004)	☐
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
		DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
3.2.11	Mercury	DIN EN ISO 12846 (E 12) (August 2012)	☒
		DIN EN ISO 17852 (E 35) (April 2008)	☐
3.2.12	Zinc	DIN EN ISO 15586 (E 4) (February 2004)	☐
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
		DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒

DepV, Annex 4	Parameter	§ 8 (1, 3) and 5 DepV	
3.2.13	Chloride	DIN EN ISO 10304-1 (D 20) (July 2009)	☒
		DIN 38405-D 1 (December 1985)	☐
		DIN EN ISO 15682 (D 31) (January 2002)	☐
3.2.14	Sulphate	DIN EN ISO 10304-1 (D 20) (July 2009)	☒
		DIN 38405-D 5 (January 1985)	☐
3.2.15	Cyanide, readily liberated	DIN 38405-D 13 (April 2011)	☐
		In waste containing sulphide: DIN ISO 17380 (May 2006)	☒
		DIN EN ISO 14403-1 (D 2) (October 2012)	☒
3.2.16	Fluoride	DIN 38405-D 4 (July 1985)	☐
		DIN EN ISO 10304-1 (D 20) (July 2009)	☒
3.2.17	Barium	DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
3.2.18	Chromium, total	DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
		DIN EN ISO 15586 (E 4) (February 2004)	☐
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
3.2.19	Molybdenum	DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐

DepV, Annex 4	Parameter	§ 8 (1, 3) and 5 DepV	
3.2.20	Antimony	DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
		DIN EN ISO 15586 (E 4) (February 2004)	☐
		DIN 38405-E 32 (May 2000)	☐
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
3.2.21	Selenium	DIN ISO 22036 (June 2009)	☒
		DIN EN ISO 11885 (E 22) (September 2009)	☒
		DIN EN ISO 17294-2 (E 29) (February 2005)	☐
3.2.22	Total dissolved solids	DIN EN 15216 (January 2008)	☒
		DIN 38409-H 1 (January 1987)	☒
		DIN 38409-H 2 (March 1987)	☒
3.2.23	Conductivity of eluate	DIN EN 27888 (C 8) (November 1993)	☒
3.2.24	Determination of dry residue	DIN EN 14346 (March 2007)	☒
3.3	Biodegradability of the dry residue of the original substance		
3.3.1	Breathability over 4 days (AT ₄)		☒
3.3.2	Gas formation rate in fermentation test over 21 days (GB ₂₁)		☐

7 Soils and soil eluates

7.1 Sample pretreatment and sample preparation

ISO 12914
2012-02

Soil quality - Microwave-assisted extraction of the aqua regia soluble fraction for the determination of elements

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DIN ISO 11465 1996-12	Soil quality - Determination of dry matter and water content on a mass basis - Gravimetric method (<i>standard withdrawn</i>)
DIN ISO 11466 1997-06	Soil quality - Extraction of trace elements soluble in aqua regia (<i>standard withdrawn</i>)
DIN ISO 19730 2009-07	Soil quality - Extraction of trace elements from soil using ammonium nitrate solution
DIN EN ISO 16720 2007-06	Soil quality - Pretreatment of samples by freeze-drying for subsequent analysis
DIN EN 13651 2002-01	Soil improvers and growing media - Extraction of calcium chloride/DTPA (CAT) soluble nutrients
DIN EN 15934 2012-11	Sludge, treated biowaste, soil and waste - Calculation of dry matter fraction after determination of dry residue or water content
DIN EN 15935 2012-11	Sludge, treated biowaste, soil and waste - Determination of loss on ignition
DIN EN 16174 2012-11	Sludge, treated biowaste and soil - Digestion of aqua regia soluble fractions of elements
DIN EN 16179 2012-11	Sludge, treated biowaste and soil - Guidance for sample pretreatment
DIN 19528 2009-01	Leaching of solid materials - Percolation method for the joint examination of the leaching behaviour of inorganic and organic substances
DIN 19529 2015-12	Leaching of solid materials - Batch test for the examination of the leaching behaviour of inorganic and organic substances at a liquid to solid ratio of 2 l/kg
DIN 19747 2009-07	Investigation of solids - Pretreatment, preparation and processing of samples for chemical, biological and physical investigations
DIN 38414- S 4 1984-10	Determination of leachability with water (Deviation: <i>Taking into account the procedural instructions of BBodSchV Annex 1 No. 3.1.2, 1999-07</i>)

BBodSchV Annex 1 Elution method 1 (soil saturation extract)
No. 3.1.2
1999-07

7.2 Physical and physico-chemical parameters

DIN ISO 10390 2005-12	Soil quality - Determination of pH <i>(standard withdrawn)</i>
DIN ISO 11265 1997-06	Soil quality - Determination of specific electrical conductivity
DIN ISO 11277 2002-08	Soil quality - Determination of particle size distribution in mineral soil material - Method by sieving and sedimentation
DIN EN ISO 11272 2014-06	Soil quality - Determination of dry bulk density
DIN EN 15933 2012-11	Sludge, treated biowaste and soil - Determination of pH

7.3 Parameters characterising

DIN ISO 10694 1996-08	Soil quality - Determination of organic carbon and total carbon after dry combustion (elemental analysis) <i>(standard withdrawn)</i>
DIN ISO 14255 1998-11	Soil quality - Determination of nitrate nitrogen, ammonium nitrogen and total soluble nitrogen in air-dry soils using calcium chloride solution as extractant
DIN ISO 15178 2001-02	Soil quality - Determination of total sulphur content after dry combustion (elemental analysis)
DIN EN 15936 2012-11	Sludge, treated biowaste, soil and waste - Determination of total organic carbon (TOC) by dry combustion
DIN EN 16166 2012-11	Sludge, treated biowaste and soil - Determination of adsorbable organically bound halogens (AOX)
DIN EN 16168 2012-11	Sludge, treated biowaste and soil - Determination of total nitrogen using dry combustion method

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DIN 19539
2016-12 Investigation of solids - Temperature-dependent differentiation of total carbon (TOC₄₀₀, ROC, TIC₉₀₀)

7.4 Anions

DIN EN ISO 17380
2013-10 Soil quality - Determination of total cyanide and easily liberatable cyanide - Continuous flow analysis method

DIN EN 15192
2007-02 Characterisation of waste and soil - Determination of Chromium(VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection
(Deviation: *Determination using ICP-OES or photometry*)

7.5 Cations

DIN ISO 16772
2005-06 Soil quality - Determination of mercury in aqua regia soil extracts with cold-vapour atomic spectrometry or cold-vapour atomic fluorescence spectrometry

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 solids: *Direct thermal extraction*)

DIN EN ISO 11885 (E 22)
2009-09 Water quality - Determination of selected elements by inductively coupled plasma optical emission spectroscopy (ICP-OES)
(Deviation: *Here for soils and soil eluates*)

DIN CEN/TS 16170
2013-02 Sludge, treated biowaste and soil - Determination of elements using inductively coupled plasma optical emission spectrometry (ICP-OES)

DIN CEN/TS 16171
2013-03 Sludge, treated biowaste and soil - Determination of elements using inductively coupled plasma mass spectrometry (ICP-MS)

DIN CEN/TS 16175-1
2013-04 Sludge, treated biowaste and soil - Determination of mercury - Part 1: Cold-vapour atomic absorption spectrometry (CV-AAS)

DIN CEN/TS 16175-2 2013-04	Sludge, treated biowaste and soil - Determination of mercury - Part 2: Cold-vapour atomic fluorescence spectrometry (CV-AFS)
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7.6 Organic parameters

ISO 8165-2 1999-07	Water quality - Determination of selected phenols - Part 2: Method by derivatisation and gas chromatography
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DIN ISO 10382 2003-05	Soil quality - Determination of organochlorine pesticides and polychlorinated biphenyls - Gas chromatographic method with electron capture detection (Deviation: <i>Determination using GC-MS</i>)
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DIN ISO 14154 2005-12	Soil quality - Determination of selected chlorophenols - Gas chromatographic method with electron capture detection (Deviation: <i>Determination using GC-MS</i>)
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DIN ISO 18287 2006-05	Soil quality - Determination of polycyclic aromatic hydrocarbons (PAH) - Gas chromatographic method with mass spectrometric detection (GC-MS)
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DIN EN ISO 16703 2011-09	Soil quality - Determination of content of hydrocarbon in the range C ₁₀ bis C ₄₀ by gas chromatography
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DIN EN ISO 22155 2013-05	Soil quality - Gas chromatographic determination of volatile aromatic and halogenated hydrocarbons and selected ethers - Static headspace method
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8 Analysis of waste, sludge and sewage sludge, sediments, recycled products, road building materials, materials for recycling and used oils as well as waste eluates

8.1 Sampling, sample preparation

DIN EN ISO 5667-13 (S 1) 2011-08	Water quality - Sampling - Part 13: Guidance on sampling of sludges
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DIN EN 12457-1 2003-01	Characterisation of waste - Leaching; Compliance test for leaching of granular waste materials and sludges - Part 1: One stage batch test at a liquid to solid ratio of 2 l/kg with particle size below 4 mm (without or with size reduction)
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DIN EN 12457-2 2003-01	Characterisation of waste - Leaching; Compliance test for leaching of granular waste materials and sludges - Part 2: One stage batch test at a liquid to solid ratio of 10 l/kg with particle size below 4 mm (without or with size reduction)
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 size reduction)
DIN EN 13346 (S 7a) 2001-04	Characterisation of sludges - Determination of trace elements and phosphorus - Aqua regia extraction methods
DIN EN 13656 2003-01	Characterisation of waste - Microwave assisted digestion with hydrofluoric (HF), nitric (HNO ₃) and hydrochloric (HCl) acid mixture for subsequent determination of elements in waste
DIN EN 13657 2003-01	Characterisation of waste - Digestion for subsequent determination of aqua regia soluble portion of elements in waste
V DIN CEN/TS 14405 2004-09	Characterisation of waste - Leaching behaviour tests - Up-flow percolation test (under specified conditions)
DIN 19698-1 2014-05	Characterisation of solids - Sampling of solid and semi-solid materials - Part 1: Guidance for the segmental sampling of stockpiles of unknown composite
E DIN 19698-2 2015-12	Characterisation of solids - Sampling of solid and semi-solid materials - Part 2: Guidance for taking samples of stockpiles for integral characterisation
DIN 38414-S 4 1984-10	Determination of leachability with water (<i>standard withdrawn</i>)
DIN 38414-S 22 2000-09	Determination of dry residue by freezing and preparation of the freeze-dried mass of sludge
LAGA PN 98 2002-11	Guideline on procedures for physical, chemical and biological examination in connection with the recycling/disposal of waste (LAGA PN 98) - Basic rules for the taking of samples from solid and semi-solid waste and deposited materials

8.2 Physical and chemical parameters

DIN EN 12176 (S 5) 1998-06	Characterisation of sludge - Determination of the pH value (<i>standard withdrawn</i>)
DIN EN 12879 (S 3a) 2001-02	Characterisation of sludges - Determination of loss on ignition of dry mass (<i>standard withdrawn</i>)
DIN EN 12880 (S 2a) 2001-02	Characterisation of sludges - Determination of dry residue and water content
DIN EN 13137 2001-12	Characterisation of waste - Determination of total organic carbon (TOC) in waste, sludges and sediments
DIN EN 14346 2007-03	Characterisation of waste - Calculation of dry matter by determination of dry residue or water content
DIN EN 14702-1 2006-06	Characterisation of sludges - Settling properties - Part 1: Determination of settleability (determination of the proportion of sludge volume and sludge volume index)
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 EN 15216 2008-01	Characterisation of waste - Determination of total dissolved solids (TDS) in water and eluates
DIN EN 15933 2012-11	Sludge, treated biowaste and soil - Determination of pH
DIN EN 15935 2012-11	Sludge, treated biowaste, soil and waste - Determination of loss on ignition
DIN EN 15936 2012-11	Sludge, treated biowaste, soil and waste - Determination of total organic carbon (TOC) by dry combustion
DIN 19539 2016-12	Investigation of solids - Temperature-dependent differentiation of total carbon (TOC ₄₀₀ , ROC, TIC ₉₀₀)

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DIN 51900-1 2000-04	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 CEN/TS 16023 2014-03	Characterisation of waste - Determination of gross calorific value and calculation of net calorific value
DepV Annex 4 No. 3.3.1 2009-04	Biodegradability of the dry residue of the original substance - Breathability determined over 4 days in laboratory test (AT ₄)

8.3 Inorganic parameters

DIN EN ISO 11732 (E 23) 2005-05	Water quality - Determination of ammonium nitrogen - Method by flow analysis (CFA and FIA) and spectrometric detection
DIN EN ISO 11885 (E 22) 2009-09	Water quality - Determination of selected elements by inductively coupled plasma optical emission spectroscopy (ICP-OES)
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 solids: <i>Direct thermal extraction</i>)
DIN EN ISO 14403-2 2012-10	Water quality - Determination of total cyanide and free cyanide using flow analysis (FIA and CFA) - Part 2: Method using continuous flow analysis (CFA)
DIN EN 14582 2007-06	Characterisation of waste - Halogen and sulphur content - Oxygen combustion in closed systems and determination methods
DIN EN 15192 2007-02	Characterisation of waste and soil - Determination of Chromium(VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection (Deviation: <i>Determination using ICP-OES or photometry</i>)
DIN EN 15309 2007-08	Characterisation of waste and soil - Determination of elemental composition using X-ray fluorescence analysis

8.4 Organic parameters

DIN EN ISO 22155 2013-05	Soil quality - Gas chromatographic determination of volatile aromatic and halogenated hydrocarbons and selected ethers - Static headspace method
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DIN EN 14039 2005-01	Characterisation of waste - Determination of hydrocarbon content in the range of C ₁₀ bis C ₄₀ by gas chromatography
DIN EN 16377 2013-12	Characterisation of waste - Determination of brominated flame retardant (BFR) in solid waste (Deviation: <i>Determination of hexabromocyclododecane (HBCD) only</i>)
LAGA KW/04 2009-12	Determination of the content of hydrocarbons in waste - Examination and analysis strategy
DIN EN 14345 2004-12	Characterisation of waste - Determination of hydrocarbon content by gravimetry
DIN EN 15308 2008-05	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 15527 2008-09	Characterisation of waste - Determination of polycyclic aromatic hydrocarbons (PAH) in waste using gas chromatography mass spectrometry (GC/MS)
DIN 38407-F 9-1 1991-05	Determination of benzene and some of its derivatives by gas chromatography (<i>standard withdrawn</i>) (Deviation for soils: <i>Extraction with methanol</i>)
DIN 38407-F 43 2014-10	Determination of selected easily volatile organic compounds in water - Method using gas chromatography and mass spectrometry by static headspace technique (HS-GC-MS)
DIN 38414-S 17 2014-04	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) PI:
AltholzV Annex IV No. 1.4.4 2002-08	Determination of pentachlorophenol (PCP) (Deviation: <i>Determination using GC-MS</i>)

AltholzV Annex IV No. 1.4.5 2002-08	Determination of polychlorinated biphenyls (PCB) (Deviation: <i>Determination using GC-MS</i>)
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8.5 Analysis of wastes and their eluates in accordance with LAGA Guideline M20

DIN ISO 10390 2005-12	Soil quality - Determination of pH (<i>standard withdrawn</i>)
DIN ISO 11466 1997-06	Soil quality - Extraction of trace elements soluble in aqua regia (<i>standard withdrawn</i>)
DIN ISO 16772 2005-06	Soil quality - Determination of mercury in aqua regia soil extracts with cold-vapour atomic spectrometry or cold-vapour atomic fluorescence spectrometry
DIN EN ISO 7027 (C 2) 2000-04	Water quality - Determination of turbidity
DIN EN ISO 7887 (C 1) 2012-04	Water quality - Examination and determination of colour
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 sulphate
DIN EN ISO 10523 (C 5) 2012-04	Water quality - Determination of pH
DIN EN ISO 11732 (E 23) 2005-05	Water quality - Determination of ammonium nitrogen - Method by flow analysis (CFA and FIA) and spectrometric detection
DIN EN ISO 11885 (E 22) 2009-09	Water quality - Determination of selected elements by inductively coupled plasma optical emission spectroscopy (ICP-OES)
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 solids: <i>Direct thermal extraction</i>)
DIN EN ISO 14402 (H 37) 1999-12	Water quality - Determination of phenol index by flow analysis (FIA and CFA)

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DIN EN ISO 14403-2 (D 3) 2012-10	Water quality - Determination of total cyanide and free cyanide using flow analysis (FIA and CFA) - Part 2: Method using continuous flow analysis (CFA)
DIN EN ISO 17380 2013-10	Soil quality - Determination of total cyanide and easily liberatable cyanide - Continuous flow analysis method
DIN EN ISO 22155 2013-05	Soil quality - Gas chromatographic determination of volatile aromatic and halogenated hydrocarbons and selected ethers - Static headspace method (<i>standard withdrawn</i>)
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 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 size reduction)
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
DIN EN 15308 2008-05	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 15527 2008-09	Characterisation of waste - Determination of polycyclic aromatic hydrocarbons (PAH) in waste using gas chromatography mass spectrometry (GC/MS)
DIN EN 15933 2012-11	Sludge, treated biowaste and soil - Determination of pH
DIN EN 15934 2012-11	Sludge, treated biowaste, soil and waste - Calculation of dry matter fraction after determination of dry residue or water content

DIN EN 27888 (C 8) 1993-11	Water quality - Determination of electrical conductivity
DIN 19539 2016-12	Investigation of solids - Temperature-dependent differentiation of total carbon (TOC ₄₀₀ , ROC, TIC ₉₀₀)
DIN 38407-F 9-1 1991-05	Determination of benzene and some of its derivatives (<i>standard withdrawn</i>) (Deviation for soils: <i>Extraction with methanol</i>)
DIN 38414-S 4 1984-10	Determination of leachability with water (<i>standard withdrawn</i>)
DIN 38414-S 17 2014-04	Determination of the organically bound halogens amenable to extraction (EOX)
DIN 38414-S 20 1996-01	Determination of 6 polychlorinated biphenyls (PCB) PI:

8.6 Water management characteristics of road building materials

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 9562 (H 14) 2005-02	Water quality - Determination of adsorbable organically bound halogens (AOX)
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 sulphate
DIN EN ISO 10523 (C 5) 2012-04	Water quality - Determination of pH
DIN EN ISO 11732 (E 23) 2005-05	Water quality - Determination of ammonium nitrogen - Method by flow analysis (CFA and FIA) and spectrometric detection
DIN EN ISO 11885 (E 22) 2009-09	Water quality - Determination of selected elements by inductively coupled plasma optical emission spectroscopy (ICP-OES)
DIN EN ISO 12846 (E 12) 2012-08	Water quality - Determination of mercury - Method using atomic absorption spectrometry (AAS) with and without enrichment

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DIN EN ISO 14402 (H 37) 1999-12	Water quality - Determination of phenol index by flow analysis (FIA and CFA)
DIN EN ISO 14403-2 2012-10	Water quality - Determination of total cyanide and free cyanide using flow analysis (FIA and CFA) - Part 2: Method using continuous flow analysis (CFA)
DIN EN ISO 17294-2 (E 29) 2005-02	Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of 62 elements
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 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 15308 2008-05	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 27888 (C 8) 1993-11	Water quality; Determination of electrical conductivity
DIN 19539 2016-12	Investigation of solids - Temperature-dependent differentiation of total carbon (TOC ₄₀₀ , ROC, TIC ₉₀₀)
DIN 38405-D 24 1987-05	Photometric determination of chromium(VI) using 1,5-diphenylcarbonohydrazide
DIN 38414-S 17 2014-04	Determination of the organically bound halogens amenable to extraction (EOX)
LAGA KW/04 2009-12	Determination of the content of hydrocarbons in waste - Examination and analysis strategy
TP Gestein-StB Part 7.1.1 2008	Modified DEV-S4 method

8.7 Selected methods for analysis of used oils

DIN EN ISO 2719 2003-09	Determination of flash point - Pensky-Martens closed cup method
DIN EN ISO 3679 2015-06	Determination of flash no-flash and flash point - Rapid equilibrium closed cup method
DIN EN ISO 12937 2002-03	Petroleum products - Determination of water content - Coulometric Karl Fischer titration method
E DIN 51777 2016-08	Petroleum products - Determination of water content using titration according to Karl Fischer
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) (Deviation: <i>Determination using GC-MS</i>)
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 51460-1 2007-11	Testing of petroleum products - Method for sample preparation - Part 1: Microwave incineration

9 Selected analysis of fuels

9.1 Selected analysis of solid fuels

DIN 22022-1 2014-07	Solid fuels - Determination of contents of trace elements - Part 1: General rules, sampling and sample preparation - Preparation of samples for the analyses (dissolution method)
DIN 22022-2 2001-02	Solid fuels - Determination of contents of trace elements - Part 2: ICP-OES
DIN 51701-3 2006-09	Testing of solid fuels - Sampling and sample preparation - Part 3: Sample preparation
DIN 51705 2001-06	Testing of solid fuels - Determination of the bulk density of solid fuels

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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 51720 2001-03	Testing of solid fuels - Determination of volatile matter content
DIN 51723 2002-06	Testing of solid fuels - Determination of fluorine content
DIN 51724-3 2012-07	Testing of solid fuels - Determination of sulphur content - Part 3: Instrumental methods
DIN 51727 2011-11	Testing of solid fuels - Determination of chlorine content
DIN 51729-10 2011-04	Testing of solid fuels - Determination of chemical composition of fuel ash - Part 10: X-ray fluorescence analysis
DIN 51729-11 1998-11	Testing of solid fuels - Determination of chemical composition of fuel ash - Part 11: Determination by inductively coupled plasma emission spectrometry (ICP-OES)
DIN 51730 2007-09	Testing of solid fuels - Determination of fusibility of fuel ash
DIN 51732 2014-07	Testing of solid fuels - Determination of total carbon, hydrogen and nitrogen - Instrumental methods
DIN 51734 2008-12	Testing of solid mineral fuels - Proximate analysis and calculation of fixed carbon
DIN 51900-1 2000-04	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
ASTM D7582 2012	Standard Test Methods for Proximate Analysis of Coal and Coke by Macro Thermogravimetric Analysis

9.2 Selected methods for analysis of solid recovered fuels

DIN EN 15400 2011-05	Solid recovered fuels - Determination of gross calorific value
DIN EN 15402 2011-05	Solid recovered fuels - Determination of the content of volatile matter
DIN EN 15403 2011-05	Solid recovered fuels - Determination of ash content
DIN EN 15407 2011-05	Solid recovered fuels - Methods for the determination of carbon (C), hydrogen (H) and nitrogen (N) content
DIN EN 15408 2011-05	Solid recovered fuels - Methods for determination of sulphur (S), chlorine (Cl), fluorine (F) and bromine (Br) content
DIN EN 15410 2011-11	Solid recovered fuels - Method for the determination of the content of major elements (Al, Ca, Fe, K, Mg, Na, P, Si, Ti)
DIN EN 15411 2011-11	Solid secondary fuels - Methods for the determination of the content of trace elements (As, Ba, Be, Cd, Co, Cr, Cu, Hg, Mo, Mn, Ni, Pb, Sb, Se, Tl, V and Zn)
DIN EN 15414-3 2011-05	Solid recovered fuels - Determination of moisture content using the oven dry method - Part 3: Moisture in general analysis sample
DIN CEN/TR 15404 2010-11	Solid recovered fuels - Methods for the determination of ash melting behaviour by using characteristic temperatures
DIN CEN/TS 15401 2010-09	Solid recovered fuels - Determination of bulk density
ASTM D7582 2012	Standard Test Methods for Proximate Analysis of Coal and Coke by Macro Thermogravimetric Analysis

9.3 Selected analysis of solid biofuels

DIN EN ISO 16948 2015-09	Solid biofuels - Determination of total content of carbon, hydrogen and nitrogen
DIN EN ISO 16967 2015-07	Solid biofuels - Determination of major elements - Al, Ca, Fe, Mg, P, K, Si, Na and Ti

DIN EN ISO 16968 2015-09	Solid biofuels - Determination of trace elements
DIN EN ISO 16994 2015-07	Solid biofuels - Determination of total content of sulphur and chlorine
DIN EN ISO 18122 2016-03	Solid biofuels - Determination of ash content
DIN EN ISO 18123 2016-03	Solid biofuels - Determination of the content of volatile matter
DIN EN ISO 18134-1 2015-12	Solid biofuels - Determination of moisture content - Oven dry method - Part 1: Total moisture - Reference method
DIN EN ISO 18134-3 2015-12	Solid biofuels - Determination of moisture content - Oven dry method - Part 3: Moisture in general analysis sample
DIN EN 14918 2014-08	Solid biofuels - Determination of calorific value
DIN EN ISO 17828 2016-05	Solid biofuels - Determination of bulk density
V DIN CEN/TS 15370-1 2006-12	Solid biofuels - Method for the determination of ash melting behaviour - Part 1: Characteristic temperatures method
ASTM D7582 2012	Standard Test Methods for Proximate Analysis of Coal and Coke by Macro Thermogravimetric Analysis

10 Selected methods for analysis of slags, ceramic and oxidic raw materials and materials

10.1 Sampling, sample preparation

DIN EN ISO 1927-2 2013-03	Monolithic (unshaped) refractory products - Part 2: Sampling
DIN 51061-2 2004-07	Testing of ceramic raw and finished materials - Part 2: Sampling of ceramic raw materials

DIN 51078 2002-12	Testing of ceramic materials - Preparation of samples for the determination of change of mass during drying and for chemical analysis <i>(standard withdrawn)</i>
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10.2 Physical and chemical parameters

DIN EN ISO 12677 2013-02	Chemical analysis of refractory products by X-ray fluorescence (XRF) - Fused cast-bead method
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DIN EN ISO 21068-1 2008-12	Chemical analysis of silicon-carbide-containing raw materials and refractory products - Part 1: General information and sample preparation
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DIN EN ISO 21068-2 2008-12	Chemical analysis of silicon-carbide-containing raw materials and refractory products - Part 2: Determination of loss on ignition, total carbon, free carbon and silicon carbide, total and free silica and total and free silicon
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DIN EN ISO 21068-3 2008-12	Chemical analysis of silicon-carbide-containing raw materials and refractory products - Part 3: Determination of nitrogen, oxygen and metallic and oxidic constituents
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DIN EN 725-3 2007-04	Advanced technical ceramics - Methods of test for ceramic powders - Part 3: Determination of the oxygen content of non-oxides by thermal extraction with a carrier gas
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DIN EN 993-1 1995-04	Methods of test for dense shaped refractory products - Part 1: Determination of bulk density, apparent porosity and true porosity
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DIN EN 993-18 2002-11	Methods of test for dense shaped refractory products - Part 18: Determination of bulk density of granular materials by the water method with vacuum
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DIN EN 14629 2007-06	Products and systems for the protection and repair of concrete structures - Test methods - Determination of chloride content in hardened concrete
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DIN 51001 2003-08	Testing of oxidic raw materials and basic materials - General bases of work for X-ray fluorescence method (XRF)
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DIN 51001, supplementary sheet 1 2010-05	Testing of oxidic raw materials and basic materials - General bases of work for X-Ray fluorescence method (XRF) - General survey on disintegration methods referred to groups of materials for the determination of test specimens for XRF
DIN 51081 2002-12	Testing of oxidic raw materials and materials - Determination of change in mass on ignition
DIN 51084 2008-11	Testing of oxidic raw and basic materials for ceramic, glass and glazes - Determination of fluoride content
DIN 66137-2 2004-12	Determination of solid state density - Part 2: Gaspycnometry
DIN 66165-1 2016-08	Particle size analysis - Sieve analysis - Part 1: Fundamentals
DIN 66165-2 2016-08	Particle size analysis - Sieve analysis - Part 2: Procedure
HfdE, Volume 3 Part 1, p. 194 2011	Determination of fluorine in fluorspar (Deviation: <i>Determination by ion chromatography</i>)
HfdE, Volume 3 Part 1, p. 234 2011	Determination of free lime (Deviation: <i>Determination using ICP-OES</i>)
HfdE, Volume 3 Part 2, p. 59 1997	Determination of free lime (Deviation: <i>Determination using ICP-OES</i>)

11 Selected methods for analysis of steels, alloys and metals

11.1 Sampling, sample preparation

ISO 4551 1987-12	Ferroalloys; Sampling and sieve analysis
ISO 4552-1 1987-12	Ferroalloys; Sampling and sample preparation for chemical analysis; Part 1: Ferrochromium, ferrosilicochromium, ferrosilicon, ferrosilicomanganese, ferromanganese

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ISO 4552-2 1987-12	Ferroalloys; Sampling and sample preparation for chemical analysis; Part 2: Ferrotitanium, ferromolybdenum, ferrotungsten, ferroniobium, ferrovanadium
ISO 3713 1987-12	<i>Ferroalloys; Sampling and sample preparation; General rules</i>
HfdE, Volume 5 p. 56 2011	Sampling of ferroalloys and added metals
DIN EN 14346 2007-03	Characterisation of waste - Calculation of dry matter by determination of dry residue or water content (Deviation: <i>Matrix scrap, metals, ferrous alloys, products and aggregates of the steel and iron industry</i>)

11.2 Physical and chemical parameters

ISO 5416 2006-04	Direct reduced iron - Determination of metallic iron content - Bromine-methanol titrimetric method
ISO 9035 1989-08	Iron ores; Determination of acid-soluble iron(II) content; Titrimetric method
DIN EN ISO 11885 (E 22) 2009-09	Water quality - Determination of selected elements by inductively coupled plasma optical emission spectroscopy (ICP-OES) (Deviation: <i>Matrix scrap, metals, ferrous alloys, products and aggregates of the steel and iron industry</i>)
DIN EN ISO 15350 2010-08	Steel and iron - Determination of total carbon and sulphur content - Infrared absorption method after combustion in an induction furnace (routine method) (Deviation: <i>Matrix scrap, oxides, ferrous alloys, waste and products and aggregates of the steel and iron industry</i>)
DIN EN ISO 15351 2010-08	Steel and iron - Determination of nitrogen content - Thermal conductimetric method after fusion in a current of inert gas (routine method) (Deviation: <i>Matrix scrap, oxides, ferrous alloys, waste and products and aggregates of the steel and iron industry</i>)
DIN EN 10276-1 2000-08	Chemical analysis of ferrous materials - Determination of oxygen in steel and iron - Part 1: Sampling and preparation of steel samples for oxygen determination

DIN EN 10276-2 2003-10	Chemical analysis of ferrous materials - Determination of oxygen content in steel and iron - Part 2: Infrared method after fusion under inert gas (Deviation: <i>Matrix scrap, oxides, ferrous alloys, waste and products and aggregates of the steel and iron industry</i>)
DIN 51732 2014-07	Testing of solid fuels - Determination of total carbon, hydrogen and nitrogen - Instrumental methods (Deviation: <i>Matrix scrap, oxides, ferrous alloys, waste and products and aggregates of the steel and iron industry</i>)
DIN 66137-2 2004-12	Determination of solid state density - Part 2: Gas pycnometry
DIN 66165-1 2016-08	Particle size analysis - Sieve analysis - Part 1: Fundamentals
DIN 66165-2 2016-08	Particle size analysis - Sieve analysis - Part 2: Procedure
HfdE, Volume 2 Part 2, p. 116 1998	Determination of total carbon and sulphur content of steel - Method using infrared atomic absorption spectroscopy
DIN 51418-2 2015-03	X-ray spectrometry - X-ray emission and X-ray fluorescence analysis (XRF) - Part 2: Definitions and basic principles for measurements, calibration and evaluation of results

12 Selected chemical analysis of plastics

DIN 53394-2 1993-12	Testing of plastics; Determination of the percentage of styrene in reaction moulding materials based on unsaturated polyester resins; Gas chromatography method (<i>standard withdrawn</i>)
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13 Health care

13.1 Hygiene (hospital hygiene)

Culture tests*

Standard/ issue date in-house method/version	Analyte – Title of standard Specification for sample pretreatment/testing	Test item
DGKH recommendation 2010 HygMed 210; 35 [3]	Hygienic microbiological analysis of flexible endoscopes after their preparation	Rinsing fluids, swabs
MiQ 22 2005-12	Hospital hygienic analysis, Part I	Disinfectant solutions, rinsing fluids, swabs
MiQ 23 2005-12	Hospital hygienic analysis, Part II	Spore strips
“Qualitätssicherung von Reinigungs- und Desin- fektionsprozessen“ Höller, Krüger, Martiny, Zschaler (Behrs Verlag) 2015-12	<i>Quality assurance of cleaning and disinfection processes (microbiological analysis of bioindicators)</i>	Bioindicators
AA-HuK-118 2016-11	Quantitative determination of E. faecium on test specimens	Bioindicators
AA-HuK-119 2016-11	Qualitative determination of E. faecium on test specimens	Bioindicators
AA-HuK-126 2016-11	Microbiological analysis of disinfectant solutions	Disinfectant solutions
AA-HuK-127 2016-11	Qualitative microbiological testing of germ carriers	Spore strips
AA-HuK-128 2016-11	Microbiological testing of rinsing solutions and swabs for checking endoscopes	Rinsing fluids, swabs

14 Fitment and utensils in laboratories and in food areas

14.1 Culture bacteriological methods for determination of bacteria on laboratory surfaces in food areas *

DIN 10113-2
1997-07

Determination of surface colony count on fitment and utensils in
food areas - Part 2: Semiquantitative swab method

DIN 10113-3 1997-07	Determination of surface colony count on fitment and utensils in food areas - Part 3: Semiquantitative method with culture media laminated taking up equipment (squeeze method)
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14.2 Implementation of tests for contamination performance using bioindicators *

DIN 10510 Annex C.3 2013-10	Food hygiene - Commercial dishwashing with multitank-transport dishwashers - Hygiene requirements, procedure testing
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DIN 10512 Annex C.3 2008-06	Food hygiene - Commercial dishwashing with single tank dishwashers - Hygiene requirements, type testing
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15 Air

15.1 Determination (sampling and analysis) of particulate and organic air pollutants in indoor air

For the sampling part of the indoor air tests listed below, the requirements of the sampling strategy DIN EN 16000-1, 2006-06, (general requirements) are fulfilled.

DIN ISO 16000-6 2012-11	Indoor air - Part 6: Determination of volatile organic compounds in indoor air test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography with MS or MS-FID
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BIA 6068 BIA workbook of the IFA 56 Del. V/15 2001-08	Alveolar fraction
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BIA 7284 BIA workbook of the IFA 31 Del. X/03 2001-08	Inhalable dust fraction
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15.2 Microbiological analysis of indoor air at workplaces *

BIA 9420 BIA workbook of the IFA 30 Del. IV/03 2001-08	Method for the determination of mould concentration in air at the workplace (Deviation: <i>Only evaluation of plates exposed to airborne germs</i>)
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BIA 9430 BIA workbook of the IFA 32 Del. IV/04 2004-01	Method for the determination of bacteria concentration in air at the workplace (Deviation: <i>Only evaluation of plates exposed to airborne germs</i>)
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Abbreviations used:

AA-HuK-xxx	In-house method
ASTM	American Society for Testing and Materials
BIA	Berufsgenossenschaftliches Institut für Arbeitsschutz (German Institute for Occupational Safety and Health)
DepV, Annex 4	German Landfill Ordinance (ordinance on landfills and long-term storage); Requirements for sampling (sampling, sample preparation and analysis of waste and landfill replacement materials)
DEV	Deutsche Einheitsverfahren zur Wasser-, Abwasser- und Schlammuntersuchung (German standard methods for analysis of water, waste water and sludge)
DGKH	Deutsche Gesellschaft für Krankenhaushygiene e.V. (German Society of Hospital Hygiene)
DIN	Deutsches Institut für Normung e. V. (German Institute for Standardisation)
EN	European standard
HfdE	Handbuch für das Eisenhüttenlaboratorium (Handbook for the Iron and Steel Laboratory)
IEC	International Electrotechnical Commission
IFA	Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (Institute for Occupational Safety and Health of the German Social Accident Insurance)
ISO	International Organisation for Standardisation
LAGA	Länderarbeitsgemeinschaft Abfall (Regional Working Group on Waste)
MiQ	Mikrobiologisch-infektiologische Qualitätsstandards (microbiological-infectiological quality standards)
TP Gestein-StB	Technical testing requirements for aggregates in road construction