

Deutsche Akkreditierungsstelle

Annex to the Partial Accreditation Certificate D-PL-14170-01-01 according to DIN EN ISO/IEC 17025:2018

Valid from: 13.01.2023

Date of issue: 25.07.2023

This annex is a part of the accreditation certificate D-PL-14170-01-00.

Holder of partial accreditation certificate:

GBA Gesellschaft für Bioanalytik mbH
Goldtschmidtstraße 5
21073 Hamburg, Germany

The testing laboratory meets the requirements of DIN EN ISO/IEC 17025:2018 to carry out the conformity assessment activities listed in this annex. The testing laboratory meets additional legal and normative requirements, if applicable, including those in relevant sectoral schemes, provided that these are explicitly confirmed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of testing laboratories and confirm generally with the principles of DIN EN ISO 9001.

Tests in the fields:

Physical, physico-chemical and chemical analysis of chemical products (wood, chemical raw materials, intermediate and end products, mineral and synthetic building materials, flame retardants, gypsum, joint sealant, specific consumer products (textiles, polystyrene, plastics, cables, composites, cardboard, leather), insulating oils and mineral oil products, fuels)
Sampling of fuels

This certificate annex is only valid together with the written accreditation certificate and reflects the status as indicated by the date of issue. The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de>.

Abbreviations used: see last page

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Valid for the locations:

Meißner Ring 3, 09599 Freiberg
Bruchstraße 5c, 45883 Gelsenkirchen
Glückaufstraße 56, 45896 Gelsenkirchen (Scholven)
Im Emscherbruch 11, 45699 Herten
Daimlerring 37, 31135 Hildesheim
Flensburger Straße 15, 25421 Pinneberg

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The test methods are marked with the following symbols for the locations at which they are carried out:

FG	=	Freiberg
GE	=	Gelsenkirchen
HE	=	Herten
HI	=	Hildesheim
PI	=	Pinneberg
SV	=	Scholven

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

1 Analysis of chemical raw materials-, intermediate- and end products

1.1 Sample pre-treatment

DIN 19747 2009-07	Investigation of solids – Pretreatment, preparation and processing of samples for chemical, biological and physical investigations	FG, GE, HI, PI
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1.2 Elemental analysis

DIN 38409-H 8 1984-09	Determination of extractable organically bonded halogens	GE
DIN EN ISO 9562 (H 14) 2005-02	Water quality – Determination of adsorbable organically bound halogens (AOX)	GE
DIN ISO 13878 1998-11	Soil quality – Determination of total nitrogen content after dry combustion (elemental analysis) (Modification: <i>Additionally carbon, hydrogen, sulphur, oxygen; matrix only solids and liquid sample matrix</i>)	GE
DIN ISO 15178 2001-02	Soil quality – Determination of total sulphur content after dry combustion (elemental analysis) (Modification: <i>Matrix here chemical raw materials, intermediate and end products</i>)	GE

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1.3 Atomic and mass spectrometry of elements

1.3.1 Determination by optical emission spectrometry with inductively coupled plasma (ICP-OES) *

DIN EN 16170 2017-01	Sludge, treated biowaste and soil – Determination of elements using inductively coupled plasma optical emission spectrometry (ICP-OES) (Modification: <i>Matrix here chemical raw materials, intermediate and end products</i>)	PI
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1.3.2 Determination by inductively coupled plasma mass spectrometry (ICP-MS) *

DIN EN ISO 17294-2 (E 29) 2017-01	Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of selected elements including uranium isotopes (Modification: <i>Matrix here acids</i>)	PI
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DIN EN 16171 (S 32) 2017-01	Sludge, treated biowaste and soil – Determination of elements using inductively coupled plasma mass spectrometry (ICP-MS) (Modification: <i>Matrix here chemical raw materials, intermediate and end products</i>)	PI
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1.4 X-ray fluorescence analysis (XRF)

In-house method HE-MA-M 18-4 2017-07	Determination of silicon and iron content by energy dispersive X-ray fluorescence spectrometry in silicon metal	HE
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1.5 Titrimetry

DIN EN 60814 1999-03	Insulating liquids – Oil-impregnated paper and pressboard – Determination of water by automatic coulometric Karl Fischer titration (Modification: <i>Matrix chemical raw materials, intermediate and end products</i>)	HE
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DIN 55908 1997-07	Pigments – Zincoxide pigments – Methods of analysis (Modification: <i>Waelz oxides matrix</i>)	FG
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In-house method PI-MA-M 08-038 2016-12	HCl content in acids	PI
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1.6 Ion chromatography of elements *

VGB-M 701 No. 0.2 and 8.8.2 2008-12	Chlorid aus wässrigem Auszug mittels Ionenchromatographie	PI
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1.7 Gravimetric determination of density *

DEV C 9 1974	Determination of density (Modification: <i>Matrix here inorganic chemicals</i>)	PI
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1.8 Photometry

DIN EN ISO 7393-2 (G 4-2) 2019-03	Water quality – Determination of free chlorine and total chlorine – Part 2: Colorimetric method using N,N-dialkyl-1,4-phenylenediamine, for routine control purposes (Modification: <i>Matrix here acids</i>)	PI
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In-house method PI-MA-M 06-070 2017-02	Iodine, iodide after extraction in water, acids and solids	PI
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2 Analysis of mineral and synthetic building materials (including gypsum, joint sealant) and flame retardants

2.1 Sample pretreatment of gypsum and lime

DIN ISO 14869-2 2003-01	Soil quality – Dissolution for the determination of total element content – Part 2: Dissolution by alkaline fusion (Modification: <i>Matrix here lime</i>)	FG
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VGB-M 701 No. 0 2008-12	Sample preparation and preparation of stock solutions	PI
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VGB–M 701 No. 0.1 2008–12	Sample preparation and preparation of stock solutions – Acid digestion	SV
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VGB–M 701 No. 0.2 2008–12	Sample preparation and preparation of stock solutions – Aqueous digestion	SV
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2.2 Optical emission spectrometry with inductively coupled plasma (ICP–OES) in gypsum

VGB–M 701 No. 8.7 2008–12	Determination of magnesium, sodium, potassium, aluminium, iron and manganese as oxides using inductively coupled plasma (ICP–OES) (Modification: <i>Digestion with aqua regia, only magnesium, sodium and potassium</i>)	PI
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2.3 Determination of pH value in gypsum by electrode measurement (*: PI)

VGB–M 701 No. 4 2008–12	Determination of pH	PI, SV
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2.4 Determination of organic compounds in mineral and synthetic building materials and flame retardants by gas chromatography with mass–selective detectors (GC–MS; GC–MS/MS) (*: PI)

DIN EN 12673 (F 15) 1999–05	Water quality – Gas chromatographic determination of some selected chlorophenols in water (Modification: <i>Matrix here building materials, additionally triclosan and bisphenol A</i>)	PI
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DIN EN ISO 22032 (F 28) 2009–07	Water quality – Determination of selected polybrominated diphenyl ethers in sediment and sewage sludge – Method using extraction and gas chromatography/mass spectrometry (Modification: <i>Other analytes polybrominated biphenyls (PBB), tetrabromobisphenol A (TBBP A), hexabromocyclododecane (HBCD) and tribromanisole (TBA); ultrasonic extraction; other internal standards, here matrix building materials, polymers and materials</i>)	PI
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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 (Modification: <i>Matrix building materials; measurement using mass selective detectors; HI and GE: Analysis only on PCB</i>)	GE, HI, PI
In-house method PI-MA-M 03–079 2022–03	Organophosphates in various matrices by GC-MS	PI

2.5 Gravimetric determination of parameters in gypsum (*: PI)

VGB-M 701 No. 1 2008–12	Determination of humidity F (Restriction SV: <i>Only VGB-M 701 No. 1.1 2008–12</i>)	PI, SV
VGB-M 701 No. 2.1 2008–12	Determination of degree of purity R° (calcium sulphate dihydrate) – Gravimetric by water of crystallisation content	SV
VGB-M 701 No. 7 2008–12	Particle determination of sieve residue at 32 µm	PI, SV
VGB-M 701 No. 8.11 2008–12	Determination of “HCl insoluble” – Gravimetric	SV

2.6 Determination of anions in gypsum by ion chromatography (*: PI)

VGB-M 701 No. 8.8.2 2008–12	Determination of chloride – Ion chromatographic	SV
VGB-M 701 No. 0.2 and 8.8.2 2008–12	Chloride from aqueous extract by ion chromatography	PI

2.7 Titrimetric determination of cations in gypsum (*: PI)

VGB-M 701 No. 2.4 2008–12	Determination of degree of purity R° (calcium sulphate dihydrate) – Complexometric by calcium determination	PI
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VGB–M 701 No. 8.9 2008–12	Determination of sulphur dioxide (SO ₂) as calcium sulphite hemihydrate – Titrimetric with iodine	SV
VGB–M 701 No. 8.12.1 2008–12	Determination of carbonates as calcium carbonate – Acidimetric	SV

2.8 Sensory analysis of gypsum

VGB–M 701 No. 5 2008–12	Determination of whiteness/colour of raw gypsum	SV
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3. Specific consumer products (textiles, styrofoam, plastics, cables, composite materials, cardboard, leather)

3.1 Sample pre-treatment

DIN ISO 14869–2 2003–01	Soil quality – Dissolution for the determination of total element content – Part 2: Dissolution by alkaline fusion (Modification: <i>Matrix here plastic and leather</i>)	FG
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3.2 Determination of elements in leather by mass spectrometry with inductively coupled plasma (ICP–MS) *

DIN EN ISO 17072–1 2019–07	Leather – Chemical determination of metal content – Part 1: Extractable metals (Modification: <i>Calibration only with aqueous reference solution; measurement only</i>)	PI
DIN EN ISO 17072–2 2019–07	Leather – Chemical determination of metal content – Part 2: Total metal content (Modification: <i>Aqua regia digestion with microwave</i>)	PI

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3.3 Determination of organic compounds by gas chromatography with mass selective detectors (GC-MS, GC-MS/MS) (*: PI)

DIN EN 12673 (F 15) 1999-05	Water quality – Gas chromatographic determination of some selected chlorophenols in water <i>(Modification: Matrix specific consumer products, additionally triclosan and bisphenol A)</i>	PI
DIN EN ISO 22032 (F 28) 2009-07	Water quality – Determination of selected polybrominated diphenyl ethers in sediment and sewage sludge – Method using extraction and gas chromatography/mass spectrometry <i>(Modification: Matrix here specific consumer products; ultrasonic extraction; other internal standards)</i>	PI
DIN EN ISO 12010 (H 47) 2019-09	Water quality – Determination of short-chain polychlorinated alkanes (SCCPs) in water – Method using gas chromatography-mass spectrometry (GC-MS) and negative-ion chemical ionisation (NCI) <i>(Modification: Additional determination of MCCP, modular clean-up, modified quantification, detector GC-MSD, matrix specific consumer products)</i>	PI
VDI 3865 Blatt 3 1998-06	Measurement of organic soil pollutants – Gas-chromatographic determination of volatile organic compounds in soil gas adsorption at activated carbon and desorption with organic solvents <i>(Modification: Matrix specific consumer products; PI: Additionally analytes)</i>	GE, PI

4 Carbon dioxide

4.1 Sensory analysis

ISBT Procedure 15.0-16.0 2000-10	Taste and odour in water (sensor)	GE
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4.2 Absorption process

ISBT Procedure 3.0 2000-10	Sensor (Michell Instruments)	GE
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ISBT Procedure 2.0 2000–10	Purity (with KOH–absorbable constituents)	GE
ISBT Procedure 6.0 2000–10	Ammonia	GE
EIGA IGC Doc 70/08/E Appendix D 2008	Oxygen (GC FID/WLD and sensor)	GE
ISBT Procedure 9.0 2000–10	Phosphine (test tube)	GE
EIGA IGC Doc 70/80/E Appendix D 2008	Sulphur dioxide (test tube)	GE
ISBT Procedure 7.0–7.1 2000–10	Nitrogen oxides (NO/NO ₂)	GE
ISBT SM–1.0 2000–10	Hydrogen cyanide (test tube)	GE
EIGA IGC Doc 70/80/E Appendix D 2008	Hydrogen sulphide (test tube)	GE

4.3 Atomic and mass spectrometry of elements

4.3.1 Determination by optical emission spectrometry with inductively coupled plasma (ICP–OES) *

DIN EN ISO 11885 (E 22) 2009–09	Water quality – Determination of selected elements by inductively coupled plasma atomic emission spectroscopy (ICP–OES) (Restriction: <i>Measurement only</i>)	PI
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ASU L 00.00–144 2019–07	Analysis of foodstuffs – Determination of calcium, copper, iron, PI magnesium, manganese, phosphorus, potassium, sodium, sulphur and zinc in foodstuffs by ICP–OES (adoption of standard of the same name DIN EN 16943, July 2017) (Restriction: <i>Measurement only</i>)	
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4.3.2 Determination by inductively coupled plasma mass spectrometry (ICP–MS) *

DIN EN ISO 17294–2(E 29) 2017–01	Water quality – Application of inductively coupled plasma mass PI spectrometry (ICP–MS) – Part 2: Determination of selected elements including uranium isotopes (Restriction: <i>Measurement only</i>)	
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ASU L 00.00–135 2011–01	Analysis of foodstuffs – Determination of arsenic, cadmium, PI mercury and lead in foodstuffs by ICP–MS after pressure digestion (adoption of standard of the same name, DIN EN 15763, April 2010 edition) (Restriction: <i>Measurement only</i>)	
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4.4 Gas chromatography

ISBT Procedure 5.0 2000–10	Carbon monoxide (GC–FID)	GE
ISBT Procedure 8.0 2000–10	Oil and fat (extraction of the snow sample residues-GC/FID)	GE
ISBT Procedure 10.0 2000–10	Hydrocarbons, volatile methane, ethane, propane, butane sum GE (calculated as methane) using GC–FID	
ISBT Procedure 12 2000–10	BTEX benzene, toluene, xylenes, ethylbenzene	GE
ISBT Procedure 12 2000–10	Volatile chlorinated hydrocarbons: Dichloromethane, 1,2– GE dichloroethane, trichloromethane, 1,1,1–trichloroethane, tetrachloromethane, trichloroethene, tetrachloroethene, freons (F11, F12, F21, F113, F114, R22)	
ISBT Procedure 12 2000–10	Methanol, ethanol	GE
ISBT Procedure 12 2000–10	Dimethyl ether	GE

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EPA 625 1984	PAH (polycyclic aromatic hydrocarbons) (GC/MSD after enrichment)	GE
ISBT Procedure 12 2000–10	Carbonyl sulphide (GC–MS)	GE
In–house method of GE–MA–M–U 3–2 2013–04	Volatile chlorinated hydrocarbons: Dichloromethane, 1,2–dichloromethane, trichloromethane, 1,1,1–trichloroethane, tetrachloromethane, trichloroethene, tetrachloroethene (adsorption on Carbotrap, thermal desorption, GC/MS); freons: F11, F12, F 21, F 113, F 114, R22 (adsorption on Carbotrap, thermal desorption, GC/MS)	GE

4.5 Gravimetry

ISBT Procedure 8.0 2000–10	Particles	GE
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4.6 Volumetry

Joint FAO/WHO Expert Committee YYYY–MM	Acid (JECFA test)	GE
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5 Analysis of oil, solutions, viscous liquids

5.1 Gas chromatography

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)	GE
DIN EN 12766–2 2001–12	Petroleum products and used oils – Determination of PCBs and related products – Part 2: Calculation of polychlorinated biphenyl (PCB)	GE
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) (Modification: <i>Measurement by GC–MS</i>)	GE

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DIN EN 12766–2 2001–12	Petroleum products and used oils – Determination of PCBs and related products – Part 2: Calculation of polychlorinated biphenyl (PCB) (Modification: <i>Measurement by GC–MS</i>)	GE
DIN EN 12766–3 Corrigendum 1 2007–06	Petroleum products and used oils – Determination of PCBs and related products – Part 3: Determination and quantification of polychlorinated terphenyls (PCT) and polychlorinated benzyl toluenes (PCBT) content by gas chromatography (GC) using an electron capture detector (ECD) (Modification: <i>Measurement by GC–MS</i>)	PI

5.2 X–ray fluorescence analysis (XRF)

AltöIV Annex 2 section 3.3.1 1987	Total halogen, semi–quantitatively using energy–dispersive XRF	HE
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5.3 Titrimetry

DIN EN ISO 12937 2002–03	Petroleum products – Determination of water content – Coulometric Karl Fischer titration method	HE
DIN EN 60814 1999–03	Insulating liquids – Oil–impregnated paper and pressboard – Determination of water by automatic coulometric Karl Fischer titration	HE
DIN 51558–2 2017–07	Testing of mineral oils – Determination of neutralization number – Part 2: Colour–indicator titration, insulating oils	HE
DIN 51559–2 1990–03	Testing of mineral oils – Determination of saponification number – Colour–indicator titration, insulating oils	HE
DIN 51559–2 2009–04	Testing of mineral oils – Determination of saponification number – Part 2: Colour–indicator titration, insulating oils	HE

5.4 Viscometry

DIN EN ISO 3675 1999–11	Crude petroleum and liquid petroleum products – Laboratory determination of density – Hydrometer method	HE
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DIN EN ISO 12185 1997-11	Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method	HE
DEV C 9 1974	Determination of density	HE
DIN 51562-1 1999-01	Measurement of kinematic viscosity by means of the Ubbelohde viscometer – Part 1: Viscometer specification and measurement procedure	HE
DIN 51562-3 1985-05	Viscometry; determination of kinematic viscosity using the Ubbelohde viscometer; viscosity relative increment at short flow times	HE
DIN 51562-4 1999-01	Viscometry – Measurement of kinematic viscosity by means of the Ubbelohde viscometer – Part 4: Viscometer calibration and determination of the uncertainty of measurement	HE
DIN 51757 2011-01	Testing of mineral oils and related materials – Determination of density	HE
DIN 53019-1 2008-09	Viscometry – Measurement of viscosities and flow curves by means of rotational viscometers – Part 1: Principles and measurement geometry	HE
DIN 53019-2 2001-02	Viscosity – Measurement of viscosities and flow curves by means of rotational viscometers – Part 2: Viscometer calibration and determination of the uncertainty of measurement	HE
In-house method HE-MA-M 11-6 2012-05	Determination of dynamic viscosity by means of rotational viscometer	HE

5.5 Simple descriptive tests

In-house method HE-MA-M U 10-4 2012-05	Colour (VDEW chromaticity diagram) and purity (appearance)	HE
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6 Fuels (recovered fuels, fuels, substitute fuels, biofuels)

6.1 Sampling

DIN EN 14778 2011-09	Solid biofuels – Sampling	GE
DIN EN 15442 2011-05	Solid recovered fuels – Methods for sampling	GE
DIN EN ISO 18135 2017-08	Solid biofuels – Sampling	GE
DIN EN ISO 21645 2020-04	Solid recovered fuels – Methods for sampling	GE

6.2 Sample preparation

DIN EN 13346 (S 7a) 2001-04	Characterisation of sludges – Determination of trace elements and phosphorus – Aqua regia extraction methods (Modification: <i>Only method A (extraction method under reflux conditions) and method C (extraction method in a closed vessel in a microwave oven; here also wood matrix)</i>)	PI
DIN EN ISO 14780 2020-02	Solid biofuels – Sample preparation	GE
DIN EN 13657 2003-01	Characterisation of waste – Digestion for subsequent determination of aqua regia soluble portion of elements in waste (Modification: <i>Here also wood matrix</i>)	PI
DIN EN 15413 2011-11	Solid recovered fuels – Methods for the preparation of the test sample from the laboratory sample	GE
DIN EN 15443 2011-05	Solid recovered fuels – Methods for the preparation of the laboratory sample	GE
DIN EN ISO 21646 2021-02	Solid recovered fuels – Sample preparation	GE

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AltholzV Annex IV No. 1.3 2002	Sample preparation: Homogenisation, drying and crushing < 2 mm	GE
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6.3 Gas chromatography

DIN EN ISO 22032 (F 28) 2009–07	Water quality – Determination of selected polybrominated diphenyl ethers in sediment and sewage sludge – Method using extraction and gas chromatography/mass spectrometry (Modification: <i>Other analytes polybrominated biphenyls (PBB), tetrabromobisphenol A (TBBP A), hexabromocyclododecane (HBCD) and tribromanisole (TBA); ultrasonic extraction; other internal standards, here wood matrix</i>)	PI
DIN EN 12766–3 2005–02 Corrigendum 1 2007–06	Petroleum products and used oils – Determination of PCBs and related products – Part 3: Determination and quantification of polychlorinated terphenyls (PCT) and polychlorinated benzyl toluenes (PCBT) content by gas chromatography (GC) using an electron capture detector (ECD) (Modification: <i>Measurement by GC–MS, ultrasonic extraction, matrix here wood</i>)	PI
DIN EN 15527 2008–09	Characterisation of waste – Determination of polycyclic aromatic hydrocarbons (PAHs) in waste using gas chromatography mass spectrometry (GC/MSD) (Modification: <i>Matrix here fuels; different solvent mixture</i>)	GE
DIN EN 16167 2019–06	Soil, treated biowaste and sludge – Determination of polychlorinated biphenyls (PCB) by gas chromatography with mass selective detection (GC–MS) and gas chromatography with electron–capture detection (GC–ECD) (Modification: <i>Matrix here fuels</i>)	GE
DIN EN 16181 2019–08	Soil, treated biowaste and sludge – Determination of polycyclic aromatic hydrocarbons (PAH) by gas chromatography (GC) and high performance liquid chromatography (HPLC) (Modification: <i>Matrix here fuels; measurement by gas chromatography only</i>)	GE

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AltholzV Annex IV No. 1.4.4 2002	Determination of selected chlorophenols (chlorophenols, PCP, phenols, cresols, xylenols) (Modification: <i>Measurement with GC-MSD; additionally analytes triclosan and bisphenol A.</i>)	PI
AltholzV Annex IV No. 1.4.5 2002	Determination of polychlorinated biphenyls (PCB) (Modification PI: <i>Measurement with GC-MSD</i>)	GE, PI
6.4 Gravimetry		
DIN EN ISO 17828 2016-05	Solid biofuels – Determination of bulk density	GE, HE
DIN EN ISO 18122 2016-03	Solid biofuels – Determination of ash content	GE
DIN EN ISO 18123 2016-03	Solid biofuels – Determination of the content of volatile matter	GE
DIN EN ISO 18134-2 2017-05	Solid biofuels – Determination of moisture content – Oven dry method – Part 2: Total moisture – Simplified procedure	GE
DIN EN ISO 18134-3 2015-12	Solid biofuels – Determination of moisture content – Oven dry method – Part 3: Moisture in general analysis sample	GE
DIN EN 13183-1 2002-07 Corrigendum 1 2003-12	Moisture content of a piece of sawn timber – Part 1: Determination by oven dry method	PI
DIN EN 14774-2 2010-04	Solid biofuels – Determination of moisture content – Oven dry method – Simplified method	GE
DIN EN 14775 2012-11	Solid biofuels – Determination of ash content	GE
DIN EN 15103 2010-04	Solid biofuels – Determination of bulk density	GE, HE
DIN EN 15148 2010-03	Solid biofuels – Determination of the content of volatile matter	GE

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DIN EN 15402 2011-05	Solid recovered fuels – Determination of the content of volatile matter	GE
DIN EN 15403 2011-05	Solid recovered fuels – Determination of ash content	GE
DIN EN 15414-3 2011-11	Solid recovered fuels – Determination of water content using the oven dry method – Part 3: Moisture in general analysis sample	GE
DIN EN 15440 2011-05 Corrigendum 1 2012-10	Solid recovered fuels – Methods for the determination of biomass content (Restriction: <i>Without method in Annex C: Determination of the biomass content by the C method</i>)	GE
DIN EN ISO 21644 2021-07	Solid recovered fuels – Methods for the determination of biomass content	GE
DIN EN ISO 21656 2021-06	Solid recovered fuels – Determination of ash content	GE
DIN EN ISO 21660-3 2021-06	Solid recovered fuels – Determination of moisture content using the oven dry method – Part 3: Moisture in general analysis sample	GE
DIN EN ISO 22167 2021-07	Solid recovered fuels – Determination of the content of volatile matter	GE
DIN 51718 1995-09	Determination of water content and the moisture of analysis sample	GE
DIN 51718 2002-06	Determination of water content and the moisture of analysis sample	GE
DIN 51719 1997-07	Determination of ash content	GE
DIN 51720 2001-03	Determination of the content of volatile matter	GE
DIN 52183 1977-11	Testing of wood; determination of moisture content (Modification: <i>Determination of dry residue</i>)	GE, PI
CEN/TS 15401 2010-09 E	Determination of bulk density	GE

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BGS Section 2.6 2012–10	Sampling, sample preparation and analytical specifications – Determination of biogenic mass and carbon content	GE
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6.5 Ion chromatography

DIN EN ISO 16994 2016–12	Solid biofuels – Determination of total content of sulphur and chlorine	HE
DIN EN 15289 2011–04	Solid biofuels – Determination of total content of sulphur and chlorine	HE
DIN EN 15408 2011–05	Solid recovered fuels – Methods for determination of sulphur (S), chlorine (Cl), fluorine (F) and bromine (Br) content	HE
DIN EN 24260 1994–05	Petroleum products and hydrocarbons; Determination of sulphur content; Wickbold combustion method	GE
DIN 51408–1 1983–06	Determination of chlorine content; Wickbold combustion method	GE
DIN 51723 2002–06	Determination of fluorine content	HE
DIN 51727 2011–11	Determination of chlorine content	GE

6.6 Determination of mercury by atomic absorption spectroscopy (K–AAS)

DIN EN ISO 12846 (E 12) 2012–08	Water quality – Determination of mercury – Method using atomic absorption spectrometry (AAS) with and without enrichment (Modification: <i>Microwave digestion with aqua regia or nitric acid; matrix here wood</i>)	PI
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6.7 Calorimetry for determination of the amount of heat from fuels

DIN EN ISO 18125 2017–08	Solid biofuels – Determination of calorific value	HE
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DIN EN 14918 2014-08	Solid biofuels – Determination of calorific value	HE
DIN EN 15170 2009-05	Characterisation of sludges – Determination of gross and net calorific value Determination of gross calorific value only (Modification: <i>Matrix fuels</i>)	HE
DIN EN 15400 2011-05	Determination of calorific value	HE
DIN EN ISO 21654 2020-01	Solid recovered fuels – Determination of gross calorific value	HE
DIN 51900-1 2000-04	Determination of gross calorific value by bomb calorimeter and calculation of net calorific value – Part 1: General principles, apparatus, methods	HE
E DIN EN ISO 18125 2015-12	Solid biofuels – Determination of calorific value	HE

6.8 Optical emission spectrometry with inductively coupled plasma (ICP-OES)

DIN SPEC 1123 DIN CEN/TS 15412 2010-09	Solid recovered fuels – Methods for determination of metallic aluminium	GE
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6.9 X-ray fluorescence analysis (XRF)

DIN EN ISO 22940 2021-12	Solid recovered fuels – Determination of elemental composition by X-ray fluorescence	HE
DIN 51729-10 2011-04	Determination of the chemical composition of fuel ash (Restriction: <i>Without fusion</i>)	HE

6.10 Sieve analysis

DIN EN ISO 17827-1 2016-10	Solid biofuels – Determination of particle size distribution for uncompressed fuels – Part 1: Oscillating screen method using sieve apertures of 3.15 mm and above	GE
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DIN EN ISO 17827–2 2016–10	Solid biofuels – Determination of particle size distribution for uncompressed fuels – Part 2: Oscillating screen method using sieve apertures of 3.15 mm and below	GE
DIN EN 15149 Part 1 2011–01	Solid biofuels – Determination of particle size distribution – Part 1: Oscillating screen method using sieve apertures of 1 mm and above	GE
DIN EN 15149 Part 2 2011–01	Solid biofuels – Determination of particle size distribution – Part 2: Oscillating screen method using sieve apertures of 3.15 mm and below	GE
DIN EN 15415–1 2011–11	Solid recovered fuels – Determination of particle size distribution – Part 1: Screen method for small dimension particles	GE

6.11 Titrimetry

DIN 51777 Part 1 1983–03	Testing of mineral oil hydrocarbons and solvents; determination of water content according to Karl Fischer; direct method	HE
DIN 51777 Part 2 1974–09	Testing of mineral oil hydrocarbons and solvents; determination of water content according to Karl Fischer; indirect method	HE
DIN 51777 2020–04	Petroleum products – Determination of water content using titration according to Karl Fischer	HE

6.12 Viscometry of physico–chemical indicators in fuels

DIN 53019–1 2008–09	Viscosimetry – Measurement of viscosities and flow curves by means of rotational viscometers – Part 1: Principles and measuring geometry	HE
DIN 53019–2 2001–02	Viscosimetry – Measurement of viscosities and flow curves by means of rotational viscometers – Part 2: Viscosimeter calibration and determination of the uncertainty of measurement	HE
In–house method HE–MA–M–U 11–006 2012–05	Viscosity rotational viscometer	HE

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6.13 Other methods for fuels

DIN EN ISO 16948 2015-09	Solid biofuels – Determination of total content of carbon, hydrogen and nitrogen	GE
DIN EN ISO 21663 2021-03	Solid recovered fuels – Methods for the determination of carbon (C), hydrogen (H), nitrogen (N) and sulphur (S) by the instrumental method	GE
DIN EN 15407 2011-05	Solid recovered fuels – Methods for the determination of carbon (C), hydrogen (H) and nitrogen (N) content	GE
ASTM D56 2016	Standard Test Method for Flash Point by Tag Closed Cup Tester	HE

Abbreviations used

AltholzV	German Waste Wood Ordinance
AltöIV	German Waste Oil Regulation
ASU	Amtliche Sammlung von Untersuchungsverfahren (Official Collection of Test Methods)
BGS	Bundesgütegemeinschaft Sekundärbrennstoffe e.V. (Federal Secondary Fuels Quality Association)
CEN/TS	European Committee for Standardization / Technical Specifications
DIN	Deutsches Institut für Normung e.V. (German Institute for Standardization)
DIN SPEC	A kind of prestandard (SPEC for specification)
EN	European standard
In-house method ST-MA-M xx-yyy	In-house method of GBA Gesellschaft für Bioanalytik mbH
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
ISBT	International Society of Beverage Technologists
VDI	Verein deutscher Ingenieure (Association of German Engineers)
VGB-M	Data sheet of VGB PowerTech

Valid from: 13.01.2023

Date of issue: 25.07.2023