

Eurofins Umwelt Ost GmbH - Lindenstraße 11 - Gewerbegebiet Freiberg Ost -
09627 Bobritzsch-Hilbersdorf

**Stiesdal SkyClean
Vejlevej 270
7323 Give
DENMARK**

Title : **Analytical Report for Order 12544426**

Test report number : **AR-25-FR-064956-01**

Project name : **ba000253**

Number of samples : **1**

Sample type: **biochar**

Date of sample taking : **2025-09-16**

Sample Taker: **not specified, sample(s) were delivered to lab**

Sample reception date : **2025-10-09**

Sample processing time : **2025-10-10 - 2025-10-28**

Comment: **142-3-3**

The test results refer exclusively to the samples analyzed as delivered. If sample containers, sample carriers and culture media procured and/or stored by the client are used, an influence on the test results cannot be excluded. If the sampling was not carried out by our laboratory or on our behalf, no guarantee is assumed for this. This also applies to calculation results based on data provided by the client. Details of the sample designation, sampling date, sample type and sample information are provided by the client. This test report is signed with a qualified electronic signature and may only be published completely and unchanged. Extracts or changes require the authorisation of Eurofins Umwelt Ost GmbH in each individual case.

Our General Terms & Conditions of Sale (GTCS) are applicable, as far as no specific agreements do exist. The GTCS are available on <http://www.eurofins.de/umwelt/avb.aspx>.

Accredited test laboratory according to DIN EN ISO/IEC 17025:2018 DAkkS notification under the DAkkS German Accreditation System for Testing. The laboratory is according (D-PL-14081-01-00) accredited.

Attachments

XML_Export_AR-25-FR-064956-01.xml



Katja Schulze
Analytical Service Manager

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Digitally signed 10/28/2025

Katja Schulze
Analytical Service Manager

										Description	sp000262		
										Date and time of sample taking	2025-09-16		
										Sample number	125156514		
Parameter	Lab	Accr.	Method	1) EBC-FeedPlus	2) EBC-AgroOr-organic	3) EBC-Agro	4) EBC-Urban	5) EBC-Materials	6) EBC-Basic	LOQ	Unit	ar	db
Biochar properties													
Bulk density < 3 mm	FR		based on VDLUFA-Methode A 13.2.1								kg/m³	-	552
Bulk density	FR	F5	DIN EN ISO 17828: 2016-05								kg/m³	673	-
specific surface (BET)	SND2/o		DIN ISO 9277: 2014								m²/g	-	57.31
water holding capacity (WHC) < 2 mm	FR		DIN EN ISO 14238, A: 2014-03								%	-	59.6
Moisture	FR	F5	DIN 51718: 2002-06							0.1	% (w/w)	21.4	-
Ash content (550°C)	FR	F5	DIN 51719: 1997-07							0.1	% (w/w)	32.6	41.5
Ash content (815°C)	FR	F5	DIN 51719: 1997-07							0.1	% (w/w)	30.7	39.1
Total carbon	FR	F5	DIN 51732: 2014-07							0.2	% (w/w)	42.7	54.3
carbon (organic)	FR		Calculation								% (w/w)	42.0	53.4
Hydrogen	FR	F5	DIN 51732: 2014-07							0.1	% (w/w)	1.0	1.3
Total nitrogen	FR	F5	DIN 51732: 2014-07							0.05	% (w/w)	1.11	1.41
Sulphur (S), total	FR	F5	DIN 51724-3: 2012-07							0.03	% (w/w)	0.26	0.34
Oxygen	FR	F5	DIN 51733: 2016-04								% (w/w)	2.8	3.6
Total inorganic carbon (TIC)	FR	F5	DIN 51726: 2004-06							0.1	% (w/w)	0.7	0.9
carbonate-CO2	FR	F5	DIN 51726: 2004-06							0.4	% (w/w)	2.5	3.2
H/C ratio (molar)	FR		Calculation									0.29	0.29
H/Corg ratio (molar)	FR		Calculation	< 0.4	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7			0.29	0.29
O/C ratio (molar)	FR		Calculation									0.049	0.050
gross calorific value (Ho,V)	FR	F5	DIN 51900: 2023-12							200	kJ/kg	15200 ¹⁾	19300 ¹⁾
net calorific value (Hu,p)	FR	F5	DIN 51900: 2023-12							200	kJ/kg	14400 ²⁾	19000 ²⁾
pH in CaCl2	FR		DIN EN ISO 10390: 2022-08									10.8	-
salt content	FR		BGK III. C2: 2006-09							0.005	g/kg	27.7	-

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Limit values										Sample number		125156514	
Parameter	Lab	Accr.	Method	1) EBC-FeedPlus	2) EBC-AgroOrganic	3) EBC-Agro	4) EBC-Urban	5) EBC-Materials	6) EBC-Basic	LOQ	Unit	ar	db
salt content	FR		BGK III. C2: 2006-09							0.005	g/l	15.3	-
Conductivity at 1,2 t pressure	FR		Internal Method SAA-H-Lf-Pflanzenkohle.040							0.01	mS/cm	-	2.1
Conductivity at 2 t pressure	FR		Internal Method SAA-H-Lf-Pflanzenkohle.040							0.01	mS/cm	-	2.6
Conductivity at 3 t pressure	FR		Internal Method SAA-H-Lf-Pflanzenkohle.040							0.01	mS/cm	-	3.6
Conductivity at 4 t pressure	FR		Internal Method SAA-H-Lf-Pflanzenkohle.040							0.01	mS/cm	-	3.9
Conductivity at 5 t pressure	FR		Internal Method SAA-H-Lf-Pflanzenkohle.040							0.01	mS/cm	-	4.1
Chromium (VI)	FR	F5	DIN EN 16318: 2016-07, Method A							1.0	mg/kg	-	< 1.0

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Elements from the micro wave pressure digestion acc. to DIN 22022-1: 2014-07													
Arsenic (As)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01		13	13	13	13		0.8	mg/kg	-	< 0.8
Lead (Pb)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01		45	120	120	120		2	mg/kg	-	3
Cadmium (Cd)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01		0.7	1.5	1.5	1.5		0.2	mg/kg	-	0.3
Copper (Cu)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01	70	70	100	100	100		1	mg/kg	-	84
Nickel (Ni)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01	25	25	50	50	50		1	mg/kg	-	17
Mercury (Hg)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01		0.4	1	1	1		0.2	mg/kg	-	< 0.2
Zinc (Zn)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01	200	200	400	400	400		1	mg/kg	-	355
Chromium (Cr)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01	70	70	90	90	90		1	mg/kg	-	63
Boron (B)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01							1	mg/kg	-	< 1
Manganese (Mn)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01							1	mg/kg	-	456
Silver (Ag)	FR	F5	DIN EN ISO 17294-2 (E29): 2017-01							5	mg/kg	-	< 5

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Elements fr. the borate digestion of ash 550 °C acc. to DIN 51729-11:1998-11(AR)

Calcium as CaO	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	% (w/w)	-	12.2
Iron as Fe ₂ O ₃	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	% (w/w)	-	2.1
Potassium as K ₂ O	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	% (w/w)	-	10.8
Magnesium as MgO	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	% (w/w)	-	3.9
Sodium as Na ₂ O	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	% (w/w)	-	2.5
Phosphorus as P ₂ O ₅	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	% (w/w)	-	8.0
sulphur as SO ₃	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	% (w/w)	-	3.1
Silicon as SiO ₂	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	% (w/w)	-	48.7

Macronutrients

Total nitrogen	FR	F5	DIN 51732: 2014-07							0.5	g/kg	11.1	14.1
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Macronutrients-LiBO₂/Li₂B₄O₇/LiBr-melt of ash 550°C [DIN 51729-11:1998-11] (OS)

Phosphorus as P ₂ O ₅	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	g/kg	-	33.0
Potassium as K ₂ O	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	g/kg	-	44.9
Calcium as CaO	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	g/kg	-	50.5
Magnesium as MgO	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	g/kg	-	16.2
Sodium as Na ₂ O	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	g/kg	-	10.5
sulphur as SO ₃	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	g/kg	-	12.7

Elements fr. the borate digestion of ash 550°C acc. to DIN 51729-11:1998-11(OS)

Iron (Fe)	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	g/kg	-	6.1
Silicon (Si)	FR	F5	DIN EN ISO 11885 (E22): 2009-09							0.1	g/kg	-	94.5

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Organic contaminants from toluene extraction acc. to EN 17503 (method 10.2.3)													
Naphthalene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	0.5
Acenaphthylene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Acenaphthene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Fluorene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Phenanthrene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	0.2
Anthracene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Fluoranthene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Pyrene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Benz(a)anthracene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Chrysene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Benzo(b)fluoranthene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Benzo(k)fluoranthene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Benzo(a)pyrene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Indeno(1,2,3-cd)pyrene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Dibenz(a,h)anthracene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Benzo(g,h,i)perylene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08							0.1	mg/kg	-	< 0.1
Total 8 EFSA-PAH excl. LOQ	FR		calculated	1	1	1	1	1	4		mg/kg	-	(n. c.) ³⁾
Total 16 EPA-PAH excl. LOQ	FR		calculated	6 ⁴⁾	6 ⁴⁾	6 ⁴⁾					mg/kg	-	0.7
Benzo(e)pyrene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08	< 1	< 1	< 1	< 1	< 1	< 1	0.1	mg/kg	-	< 0.1

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Benzo-(j)-fluoranthene	FR	F5	DIN EN 17503, Procedure 10.2.3: 2022-08	< 1	< 1	< 1	< 1	< 1	< 1	0.1	mg/kg	-	< 0.1
Plausibility													
Plausibility check	FR											OK	-

Explanations

LOQ - Limit of quantification

ar - as received

db - dry basis

Lab - Abbreviation of the performing laboratory

Accr. - Abbreviation of the accreditation of the performing laboratory

Comments for results

¹⁾ (Ho, V) gross calorific value at constant volume, without thermochemical corrections from the halogen contents

²⁾ (Hu, p) net calorific value at constant pressure, without thermochemical corrections from the halogen contents

³⁾ not calculable

The parameters identified by FR have been performed by the laboratory Eurofins Umwelt Ost GmbH (Lindenstraße 11, Gewerbegebiet Freiberg Ost, Bobritzsch-Hilbersdorf). The accreditation code F5 identifies the parameters accredited according to DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 .

The parameters identified by SND2 have been performed by the laboratory Ruhr Lab GmbH (Glückaufstraße 56, Gelsenkirchen).

/o - The analysis has been outsourced.

Explanations regarding Limits

Analysis performed according to guidelines for a sustainable production of biochar - EBC, Version 10.3E - of 05/04/2023.

[1] EBC (2012-2025) 'European Biochar Certificate - Guidelines for a Sustainable Production of Biochar.' Carbon Standards International (CSI), Frick, Switzerland.

(<http://carbon-standards.com/ebc>). Version 10.5E

from 14th August 2025

AR: related to ash

OS: related to original substance

⁴⁾ The very low PAH limit values only allow an analytical accuracy of 40% for the limit value: "sum 16 EPA-PAH" of 6 mg/kg which implies an accuracy of ± 2.4 mg/kg db, respectively.

The presentation of comparative values in the analytical report is a service provided by EUROFINS UMWELT. The cited comparative values (limit, guideline or other allocation values) are partially simplified and do not take into account all comments, ancillary provisions and/or exemptions of the corresponding regulations.