

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

**Skånefrö AB**  
**Storgatan 1**  
**27293 Tommarp**  
**SWEDEN**

Title : **Test report for order 12030545**  
Test report number : **AR-20-FR-030765-01**

Project name : **Biochar according to EBC, ba-se-27-1-1**

Number of samples : **1**  
Sample type: **biochar**  
Date of sample taking : **2020-08-26**  
Sample Taker: **Client**

Sample reception date : **2020-08-28**  
Sample processing time : **2020-08-28 - 2020-09-16**

The test results refer solely to the analysed test specimen. Unless the sampling was done by our laboratory or in our sub-order the responsibility for the correctness of the sampling is disclaimed. This test report is only valid with signature and may only be further published completely and unchanged. Extracts or changes require the authorisation of the EUROFINS UMWELT 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 17025:2005 notification under the DAkkS German Accreditation System for Testing. The laboratory is according (D-PL-14081-01-00) accredited.

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Digitally signed 9/16/2020  
Sabine Bandemer  
Prüfleitung



<b>Description</b>	<b>sp--se-27-1-1-1</b>
<b>Date and time of sample taking</b>	<b>2020-08-26 14:00</b>
<b>Sample number</b>	<b>120116017</b>

Parameter	Lab	Accr.	Method	LOQ	Unit	ar	db
<b>Biochar properties</b>							
Bulk density < 3 mm	FR		in Anlehnung an VDLUFA-Methode A 13.2.1		kg/m <sup>3</sup>	-	150
specific surface (BET)	SND2/o		DIN ISO 9277		m <sup>2</sup> /g	-	91.11
Moisture	FR	JE02	DIN 51718: 2002-06	0.1	% (w/w)	24.6	-
Ash content (550°C)	FR	JE02	DIN 51719: 1997-07	0.1	% (w/w)	17.3	22.9
Carbon	FR	JE02	DIN 51732: 2014-07	0.2	% (w/w)	51.0	67.6
carbon (organic)	FR	JE02	berechnet		% (w/w)	50.8	67.4
Hydrogen	FR	JE02	DIN 51733: 2014-07	0.1	% (w/w)	1.6	2.2
Total nitrogen	FR	JE02	DIN 51732: 2014-07	0.05	% (w/w)	2.00	2.65
Sulphur (S), total	FR	JE02	DIN 51724-3: 2012-07	0.03	% (w/w)	0.11	0.14
Oxygen	FR	JE02	DIN 51733: 2016-04		% (w/w)	3.7	4.9
Total inorganic carbon (TIC)	FR	JE02	DIN 51726: 2004-06	0.1	% (w/w)	0.2	0.2
carbonate-CO2	FR	JE02	DIN 51726: 2004-06	0.4	% (w/w)	0.6	0.7
H/C ratio (molar)	FR	JE02	berechnet			0.38	0.38
H/Corg ratio (molar)	FR	JE02	berechnet			0.38	0.39
O/C ratio (molar)	FR	JE02	berechnet			0.054	0.054
pH in CaCl2	FR		DIN ISO 10390: 2005-12			10.1	-
Conductivity	FR		BGK III. C2: 2006-09	5	µS/cm	2650	-
salt content	FR		BGK III. C2: 2006-09	0.005	g/kg	14.0	-
salt content	FR		BGK III. C2: 2006-09	0.005	g/l	2.10	-

**Elements from the micro wave pressure digestion acc. to DIN 22022-1: 2014-07**

Arsenic (As)	FR	JE02	DIN EN ISO 17294-2: 2005-02	0.8	mg/kg	-	< 0.8
Lead (Pb)	FR	JE02	DIN EN ISO 17294-2: 2005-02	2	mg/kg	-	4
Cadmium (Cd)	FR	JE02	DIN EN ISO 17294-2: 2005-02	0.2	mg/kg	-	< 0.2
Copper (Cu)	FR	JE02	DIN EN ISO 17294-2: 2005-02	1	mg/kg	-	22
Nickel (Ni)	FR	JE02	DIN EN ISO 17294-2: 2005-02	1	mg/kg	-	5
Mercury (Hg)	FR	JE02	DIN 22022-4: 2001-02	0.07	mg/kg	-	< 0.07
Zinc (Zn)	FR	JE02	DIN EN ISO 17294-2: 2005-02	1	mg/kg	-	214
Chromium (Cr)	FR	JE02	DIN EN ISO 17294-2: 2005-02	1	mg/kg	-	11
Boron (B)	FR	JE02	DIN EN ISO 17294-2: 2005-02	1	mg/kg	-	< 1
Manganese (Mn)	FR	JE02	DIN EN ISO 17294-2: 2005-02	1	mg/kg	-	178

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Parameter	Lab	Accr.	Method	LOQ	Unit	ar	db
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**Elements fr. the borate digestion of ash 550 °C acc. to DIN 51729-11: 1998-11**

Phosphorus as P2O5	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	11.1
Magnesium as MgO	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	3.3
Calcium as CaO	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	6.5
Potassium as K2O	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	14.1
Sodium as Na2O	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	1.6
Iron as Fe2O3	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	1.6
Silicon as SiO2	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	51.9
sulphur as SO3	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	0.9

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

Calcium (Ca)	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	1.1
Iron (Fe)	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	0.3
Potassium (K)	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	2.7
Magnesium (Mg)	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	0.5
Sodium (Na)	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	0.3
Phosphorus	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	1.1
Sulphur (S)	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	< 0.1
Silicon (Si)	FR	JE02	DIN EN ISO 11885 (E22): 2009-09	0.1	% (w/w)	-	5.6

**Organic contaminants from toluene extraction acc. to EN 16181:2019-08 (method 2)**

Naphthalene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	2.0
Acenaphthylene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	< 0.1
Acenaphthene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	< 0.1
Fluorene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.2
Phenanthrene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.9
Anthracene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.2
Fluoranthene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.4
Pyrene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.3
Benz(a)anthracene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.2
Chrysene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.1
Benzo(b)fluoranthene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.2
Benzo(k)fluoranthene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	< 0.1
Benzo(a)pyrene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.1
Indeno(1,2,3-cd)pyrene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	< 0.1
Dibenz(a,h)anthracene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	0.1
Benzo(g,h,i)perylene	FR	JE02	DIN EN 16181:2019-08	0.1	mg/kg	-	< 0.1
Total 16 EPA-PAH excl. LOQ	FR	JE02	DIN EN 16181:2019-08		mg/kg	-	4.7

## 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

The parameters identified by FR have been performed by the laboratory Eurofins Umwelt Ost GmbH (Bobritzsch-Hilbersdorf). The accreditation code JE02 identifies the parameters accredited according to DIN EN ISO/IEC 17025:2005 D-PL-14081-01-00 .

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

/o - The analysis has been outsourced.