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**AVEBIOM Spanish Bioenergy Association  
Fray Luis de León 22**

**47002 Valladolid  
SPANIEN**

Title: **Test report to order 11315320**  
Test report: **No. 1013581001F2**

Project: **No. 1013581**  
Title of project: **full ENplus analysis AVEBIOM 009**  
Number of samples: **1 sample**  
Sample type: **wood pellets**  
Sampler: **unknown**  
Receipt of samples: **2013-12-09**  
Test period: **2013-12-09 - 2013-12-27**

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 not valid with a different end use.

# Test report to order 11315320

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Project: full ENplus analysis AVEBIOM 009

Analysis according to EN plus January 2012

Parameter	Unit	LOQ	limits			Sample designation	AVEBIOM 009
			EN Plus-A1	EN Plus-A2	EN Plus-B		
Lab-ID#						113077461	
Method							

## Quality characteristics

diameter, D	mm		D06 6±1 D08 8±1	D06 6±1 D08 8±1	D06 6±1 D08 8±1	DIN EN 16127	6,1
length, L	mm		3,15 ≤ L ≤ 40	3,15 ≤ L ≤ 40	3,15 ≤ L ≤ 40	DIN EN 16127	according
water content, M	% w/w ar	0,1	M10 ≤ 10	M10 ≤ 10	M10 ≤ 10	DIN EN 14774-2	4,7
ash content, A (550°C)	% w/w db	0,1	A0.7 ≤ 0,7	A1.5 ≤ 1,5	A3.0 ≤ 3,0	DIN EN 14775	0,59
mechanical durability, DU	% w/w ar		DU97.5 ≥ 97,5	DU97.5 ≥ 97,5	DU96.5 ≥ 96,5	DIN EN 15210-1	98,7
fine portion, F (< 3,15 mm)	% w/w ar	0,1	F1,0 < 1,0	F1,0 < 1,0	F1,0 < 1,0	DIN EN 15149-2	0,1
additive	% w/w ar		< 2 % (w/w)	sort and amount must be specified		Information given by the customer	not specified
bulk density, BD	kg/m³ ar		BD 600 ≥ 600	BD 600 ≥ 600	BD 600 ≥ 600	DIN EN 15103	650
net calorific value, Q (H u.p)	MJ/kg ar	0,2	16,5 ≤ Q ≤ 19	16,3 ≤ Q ≤ 19	16,0 ≤ Q ≤ 19	DIN EN 14918	18,10
nitrogen total, N	% w/w db	0,05	N0.3 ≤ 0,3	N0.5 ≤ 0,5	N1.0 ≤ 1,0	DIN EN 15104	0,13
sulfur total, S	% w/w db	0,005	S0.03 ≤ 0,03	S0.03 ≤ 0,03	S0.04 ≤ 0,04	DIN EN 15289	0,009
chlorine total, Cl	% w/w db	0,005	Cl0.02 ≤ 0,02	Cl0.02 ≤ 0,02	Cl0.03 ≤ 0,03	DIN EN 15289	< 0,005

## Determination of minor elements from the microwave digestion according to DIN EN 15297

arsenic, As	mg/kg db	0,8	≤ 1	≤ 1	≤ 1	DIN EN ISO 17294-2	< 0,8
lead, Pb	mg/kg db	2	≤ 10	≤ 10	≤ 10	DIN EN ISO 17294-2	< 2
cadmium, Cd	mg/kg db	0,2	≤ 0,5	≤ 0,5	≤ 0,5	DIN EN ISO 17294-2	< 0,2
chromium total, Cr	mg/kg db	1	≤ 10	≤ 10	≤ 10	DIN EN ISO 17294-2	< 1
copper, Cu	mg/kg db	1	≤ 10	≤ 10	≤ 10	DIN EN ISO 17294-2	< 1
nickel, Ni	mg/kg db	1	≤ 10	≤ 10	≤ 10	DIN EN ISO 17294-2	< 1
mercury, Hg	mg/kg db	0,07	≤ 0,1	≤ 0,1	≤ 0,1	DIN EN 1483	< 0,07
zinc, Zn	mg/kg db	1	≤ 100	≤ 100	≤ 100	DIN EN ISO 17294-2	11

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Analysis according to EN plus January 2012

Parameter	Unit	LOQ	limits			Sample designation	
			EN Plus-A1	EN Plus-A2	EN Plus-B	Lab-ID#	Method
<b>Ash melting behaviour (oxidizing atmosphere) on ash 815°C</b>							
shrinkage start temperature, SST	°C		can be given	can be given	can be given	analogue DIN CEN/TS 15370-1	1030
deformation temperature, DT	°C		≥ 1200	≥ 1100	≥ 1100	analogue DIN CEN/TS 15370-1	1270
hemisphere temperature, HT	°C		can be given	can be given	can be given	analogue DIN CEN/TS 15370-1	1290
flow temperature, FT	°C		can be given	can be given	can be given	analogue DIN CEN/TS 15370-1	1300

Annotation:

length: up to 1 % of pellets can be longer than 40mm. Maximum length should be <45mm.  
 Hu,p: net calorific value at constant pressure

ar - as received  
 db - dry basis

--- Eurofins Umwelt is not liable for accuracy of the cited limits.