

Namibia Biomass Characteristics		Socor Labs - France, 2016					DBFZ - Germany, 2016					Force Technology - Denmark, 2017										Overall				
Samples:		OBI	OES	BPN	CCF	Sample Average	Testing Standards	OBI	OES	BPN	CCF	Sample Average	Testing Standards	OT1	OT2	OH1	OH2	GE1	GE2	OS	AU	GO1	Sample Average	Testing Standards	Global Averages	
Physical properties																										
Moisture content	%	6.5	5.8	8.1	8.1	7.1	NF EN ISO 18134-1	6.5	5.7	7.1	9.5	7.2	DIN EN 14774-1	15.8	21.1	16.9	25.3	22.0	21.8	9.7	23.8	18.3	19.4	DS/EN ISO 18134-1	11.2	% moisture
Dry matter	%	93.5	94.2	91.9	91.9	92.9	NF EN ISO 18134-1	93.50	94.99	94.91	95.21	94.65	calculated													
Bulk volume	kg/m3	260	270	230	200	240	NF EN ISO 17828																			
Fines <3.15 mm	%	0.2	1.0	6.3	3.7	2.8	NF EN ISO 18846																			
Fraction 0 - 1mm	%	0.1	0.7	1.8	1.3	1.0	NF EN ISO 17827																			
Fraction 0 - 3.15mm	%	0.1	0.3	4.5	2.4	1.8	NF EN ISO 17827																			
Fraction 3.15 - 8mm	%	1.8	1.4	26.1	3.9	8.3	NF EN ISO 17827																			
Fraction 8 - 16mm	%	12.3	5.6	45.7	10.0	18.4	NF EN ISO 17827																			
Fraction 16 - 45mm	%	71.6	44.9	21.9	42.2	45.2	NF EN ISO 17827																			
Fraction 45 - 63mm	%	10.2	30.9	0.0	11.3	13.1	NF EN ISO 17827																			
Fraction 63 - 100mm	%	2.1	13.5	0.0	12.7	7.1	NF EN ISO 17827																			
Fraction 100 - 200mm	%	1.6	2.8	0	14.8	4.8	NF EN ISO 17827																			
Fraction >200mm	%	0.0	0.0	0.0	1.5	0.4	NF EN ISO 17827																			
Basic analysis																										
Ash - dry wt	%	2.58	2.60	8.22	3.13	4.13	NF EN ISO 18122	4.53	5.01	5.09	4.79	4.86	DIN EN 14775	3.70	3.90	4.10	3.90	3.30	2.90	3.60	3.50	2.90	3.53	DS/EN ISO 18122	4.17	% ash, dry wt
Ash - gross wt	%	3.60	3.60	6.20	2.10	3.88	ISO 1171							3.10	3.00	3.40	2.90	2.50	2.20	3.30	2.70	2.40	2.83	DS/EN ISO 18122		
Volatiles, dry wt	%	3.30	3.40	5.70	1.90	3.58	ISO 1171	80.3	78.8	78.0	78.5	78.9	DIN EN 15148													
Volatiles, gross wt	%	2.41	2.45	7.55	2.87	3.82	NF EN ISO 18122																			
Fixed carbon	%	78.10	77.90	76.50	78.50	77.75	NF EN ISO 18123																			
Elemental analysis																										
C, total dry wt	%	47.2	47.1	47.8	49.1	47.8	NF EN ISO 16948	43.1	47.9	48.0	49.4	47.1	DIN EN 15104	48.2	48.1	47.9	48.2	48.6	48.8	48.8	48.9	48.7	48.5	DS/EN ISO 16948	47.8	% C, dry wt
C, total gross wt	%	44.1	44.3	43.9	45.1	44.4	NF EN ISO 16948							40.6	38.0	39.8	36.0	37.9	38.2	44.1	37.3	39.8	39.1	DS/EN ISO 16948		
H, total dry wt	%	5.80	5.80	5.65	5.85	5.78	NF EN ISO 16948	5.16	5.47	5.46	5.71	5.5	DIN EN 15104	5.6	5.7	5.6	5.6	5.6	5.7	5.6	5.7	5.8	5.7	DS/EN ISO 16948	5.6	% H, dry wt
H, total gross wt	%	6.15	6.11	6.10	6.28	6.16	NF EN ISO 16948							4.7	4.5	4.6	4.2	4.4	4.5	5.1	4.3	4.7	4.6	DS/EN ISO 16948		
N, total dry wt	%	0.87	0.78	0.66	0.54	0.71	NF EN ISO 16948	0.51	0.63	0.81	0.87	0.7	DIN EN 15104	0.6	0.7	0.6	0.7	0.6	0.7	0.6	0.7	0.6	0.6	DS/EN ISO 16948	0.7	% N, dry wt
N, total gross wt	%	0.81	0.73	0.61	0.50	0.66	NF EN ISO 16948							0.5	0.6	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	DS/EN ISO 16948		
S, total dry wt	%	0.047	0.025	0.056	0.041	0.042	NF EN ISO 16994	0.037	0.047	0.070	0.039	0.048	DIN EN 15289	0.044	0.060	0.060	0.062	0.039	0.054	0.055	0.047	0.045	0.052	DS/EN ISO 16994 A	0.047	% S, dry wt
Cl, total dry wt	%	0.023	0.036	0.025	0.032	0.029	NF EN ISO 16994	0.027	0.048	0.021	0.033	0.032	DIN EN 15289	0.039	0.052	0.029	0.044	0.033	0.036	0.026	0.033	0.028	0.036	DS/EN ISO 16994 A		
O, total dry wt	%	43.5	43.7	37.5	41.4	41.5	NF EN ISO 16993	51.17	45.91	45.64	43.95	46.67	calculated	41.9	41.5	41.6	41.4	41.8	41.8	41.2	41.2	42.0	41.6	DS/EN ISO 16993	43.3	% O, dry wt
Thermal analysis																										
Gross CV, dry wt	cal/g	4460	4495	4381	4644	4495	NF EN 14918							4486	4519	4455	4519	4527	4552	4541	4554	4571	4525	DS/EN ISO 14918		
Gross CV, dry wt	J/g	18673	18820	18342	19443	18820	NF EN 14918	18470	18310	18600	19280	18665	DIN EN 14918	18780	18920	18650	18920	18950	19060	19010	19070	19140	18944	DS/EN ISO 14918	18810	J/g - Gross CV, dry wt
Gross CV, gross wt	cal/g	4170	4234	4026	4268	4175	NF EN 14918							3779	3566	3701	3377	3533	3561	4103	3471	3734	3647	DS/EN ISO 14918		
Gross CV, gross wt	J/g	17459	17727	16856	17869	17478	NF EN 14918	17370	17460	17440	18070	17585	DIN EN 14918	15820	14930	15500	14140	14790	14910	17180	14530	15630	15270	DS/EN ISO 14918	16778	J/g - Net CV, dry wt
Net CV, dry wt	cal/g													4196	4224	4164	4226	4234	4256	4249	4259	4271	4231	DS/EN ISO 14918		
Net CV, dry wt	J/g													17570	17680	17430	17690	17720	17820	17790	17830	17880	17712	DS/EN ISO 14918		
Net CV, gross wt	cal/g													3442	3211	3360	3010	3176	3202	3782	3107	3381	3297	DS/EN ISO 14918		
Net CV, gross wt	J/g													14410	13440	14070	12600	13300	13400	15840	13010	14160	13803	DS/EN ISO 14918		
Mineral content																										
Al, total dry wt	mg/kg	49.36	294.42	639.26	145.49	282.13	NF EN ISO 16967	73.8	343.0	880.0	225.0	380.5	DIN EN 15290; DIN EN 15297	79	310	99	81	59	50	70	97	41	98	DS/EN ISO 16967 A	254	mg/kg Al, dry wt
Ca total dry wt	mg/kg	18240.10	14654.30	17752.50	9361.74	15002.16	NF EN ISO 16967	16500	15400	17300	10700	14975	DIN EN 15290; DIN EN 15297	21000	19000	22000	22000	15000	14000	18000	17000	13000	17889	DS/EN ISO 16967 A	15955	mg/kg Ca, dry wt
Fe, total dry wt	mg/kg	40.03	157.13	803.13	121.24	280.38	NF EN ISO 16967							41	160	58	51	37	40	41	52	27	56	DS/EN ISO 16967 A		
Mg, total dry wt	mg/kg	889.98	1053.00	612.02	543.07	774.52	NF EN ISO 16967	773	997	596		789	DIN EN 15290; DIN EN 15297	830	1400	590	1100	820	670	1200	890	970	941	DS/EN ISO 16967 A	835	mg/kg Mg, dry wt
Mn, total dry wt	mg/kg													25	21	16	13	8	10	15	15	12	15	DS/EN ISO 16968		
Mo, total dry wt	mg/kg													0.1	1.1	0.4	0.3	0.2	0.3	0.2	0.5	0.5	0.4	DS/EN ISO 16968		
P, total dry wt	mg/kg	197.08	428.32	166.17	186.46	244.51	NF EN ISO 16967	203	398	174	253	257	DIN EN 15290; DIN EN 15297	220	380	190	270	170	190	570	220	240	272	DS/EN ISO 16967 A	258	mg/kg P, dry wt
K, total dry wt	mg/kg	3228.71	3422.98	2173.52	2115.47	2735.17	NF EN ISO 16967	3230	3230	1800	2520	2695	DIN EN 15290; DIN EN 15297	2400	3400	2400	3300	3100	3000	2300	3400	3100	2933	DS/EN ISO 16967 A	2788	mg/kg K, dry wt
Na, total dry wt	mg/kg	16.30	352.22	131.85	28.29	28.29	NF EN ISO 16967	4	245	101	4	89	DIN EN 15290; DIN EN 15297	32	59	31	33	23	14	69	41	17	35	DS/EN ISO 16967 A	51	mg/kg Na, dry wt
Ti, total dry wt	mg/kg	3.64	19.62	81.05	7.34	27.91	NF EN ISO 16967							3	12	6	4	3	3	5	6	3	5	DS/EN ISO 16967 A		
Cd, total dry wt	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4	NF EN ISO 16968	<0.20	<0.20	<0.20	<0.20	<0.20	DIN EN 15290; DIN EN 15297	0.073	0.030	0.076	0.028	0.010	0.014	0.014	0.015	0.015	0.031	DS/EN ISO 16968		
Cr, total dry wt	mg/kg	0.8	2.0	6.0	8.0	4.2	NF EN ISO 16968	0.145	0.577	2.280	0.470	0.868	DIN EN 15290; DIN EN 15297	2.1	2.2	0.8	0.6	0.6	0.4	0.4	0.5	0.4	0.9	DS/EN ISO 16968	2.0	mg/kg Cr, dry wt
Co, total dry wt	mg/kg													0.11	0.16	0.07	0.19	0.05	0.04	0.03	0.08	0.06	0.09	DS/EN ISO 16968		
Cu, total dry wt	mg/kg	3.00	2.00	3.00	3.00	2.75	NF EN ISO 16968	2.30	1.46	2.05	3.08	2.22	DIN EN 15290; DIN EN 15297	3.1	3.1	3.4	2.4	2.0	2.0	1.7	2.1	1.8	2.4	DS/EN ISO 16968	2.46	mg/kg Cu, dry wt
Ni, total dry wt	mg/kg	1.50	1.50	3.00	4.00	2.50																				