Handelsweg 70
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T. +31 (0)10-28 23 292
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INTERNATIONAL LABORATORIES

Analytical Report

Control Union Certifications Germany GmbH
Attn: . .
Dorotheastrasse 30
D-10318 Berlin
Germany

Reportnr.	: **1761430 version 1**		
Sample Arrival Date	: 27-Jul-2023 10:34	Sampling Date *	: 06-Jul-2023
ReportDate Version	: **03-Aug-2023 16:06**	Samplesize (kg)	: 15
Packing	: Plastic, ambient	Seal / Seal Code	: No /

Sample information *

Disponent Number	: 843034	Product specification	: WOODPELLETS/A1-
		Reference	: PELLETA1/0607 UA004_2023_07_06

*** Information supplied by customer (TLR takes no responsibility for this information).**

Composition Determination

Parameter	Result (as received)	Result (on dry)	Result (as det)	Result (dry ash free)			
Total Moisture	4,06				%	Q	R
Moisture Airdry			9,52		%	Q	R
Ash	0,30	0,31	0,28		%	Q	R
Volatile matter incl. moisture.			86,78		%	Q	R
Volatile matter	81,92	85,39	77,26	85,66	%		
Fixed Carbon	13,72	14,30			%		
Gross Calorific Value	4669,5	4867,1	4404,0	4882,2	kcal/kg	Q	R
	19,55	20,38	18,44	20,44	GJ/mt		
	8405,2	8760,8	7927,1	8788,0	B.T.U.'s/Lb		
Nett Calorific Value (cV)	4360,1				kcal/kg	Q	
	18,25				GJ/mt		
	7848,2				B.T.U.'s/Lb		
	5,1				kWh/kg		
Nett Calorific Value (cP)	18,18				GJ/mt	Q	
Emissionfactor CO2 (cV)	97,76				t CO2/TJ		
Emissionfactor CO2 (cP)	98,16				t CO2/TJ		
Hydrogen	5,83	6,07	6,56	6,09	%	Q	R
Carbon	48,67	50,73	45,90	50,88	%	Q	R
Nitrogen.	0,10	0,10	0,09	0,10	%	Q	R
S. (Sulfer)	< 0,010	< 0,010	< 0,010	< 0,010	%	Q	R
Oxygen (by difference)				42,910	%		

Preparation

Common

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Preparation sample	Biomass preparation in accordance with NEN EN 14780 and NEN EN 15443				Q	R

Composition Determination

Common

Parameter	Result (as received)	Result (on dry)	Result (as det)

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AFT. (oxid) DT		1440	gr. C		R
Diameter pellets (n=25)	6,2		mm	Q	R
Length of pellets	14,1		mm	Q	R
Sieve < 3,15 mm.	0,17		%		R

Metal and other elements

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Cd (Cadmium)	0,097	0,101	0,092	mg/kg	Q	R
Pb (Lead)	0,07	0,08	0,07	mg/kg	Q	R
As (Arsenic)	< 0,040	< 0,040	< 0,040	mg/kg	Q	R
Hg (Mercury)	< 0,020	< 0,020	< 0,020	mg/kg	Q	R
Ni (Nickel)	< 3,0	< 3,0	< 3,0	mg/kg	Q	R
Cl (Chlorine).	< 0,005	< 0,005	< 0,005	%	Q	R
Cr.(Chromium)	< 5,0	< 5,0	< 5,0	mg/kg		R
Cu.(Copper)	< 5,0	< 5,0	< 5,0	mg/kg		R
Zn. (Zinc)	7,1	7,4	6,7	mg/kg		R

Other Analysis

Common

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Mechanical Durability	99,0			%	Q	R
Bulk density-	662			kg/m3	Q	R

Q - Analyses ISO 17025 accredited by RvA (ILAC)
R - Carried out by TLR International Laboratories, location Ridderkerk

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ANNEX

Method Descriptions

Composition Determination

Common

Method Description	Method Code
Determination of ash; gravimetric method Coal: NEN-ISO 1171 Biomass: NEN-EN15403; Secondary bio fuels: NEN-EN- ISO 18122	..
Determination of carbon (C), nitrogen (N), hydrogen (H) with the element analyser Coal : NEN-ISO29541, Biomass: NEN-EN-ISO 16948 : Secondary bio fuels NEN-EN 15407	..
Determination of fusibility of ash; ash formed (815°C), cube form	NEN-EN-ISO 21404
Determination of gross caloric value by bombcaloric method and calculation of net caloric value Coal: NEN-ISO 1928, Solid Biofuels NEN-EN-ISO18125; secundairy biofuels NEN-EN15400	..
Determination of moisture in the analyse sample; gravimetric method Coal: NEN-ISO 11722;Biomass: NEN-EN-ISO 18134-3; Secondary bio fuels : NEN-EN15414-3	..
Determination of Sulphur (S); NEN-EN-ISO 16994	..
Determination of the amount of material passing through a sieve with 3,15 mm diameter round hole ISO 18846:2016	.
Determination of the length and diameter of the woodpellets; Own method	Acc. NEN-EN-ISO17829
Determination of total moisture in the sample; gravimetric method Coal:NEN-ISO-589 MB biomasss: NEN-EN-ISO 18134-1; Secondary bio fuels : NPR-CEN/TS 15414-1	..
Determination of volatile matter content; gravimetric method Coal: NEN-ISO 562; Biomass: NEN-EN-ISO 18123; secundairy biofuels: NEN-EN 15402	.

Metal and other elements

Method Description	Method Code
Determination of Chlorine (Cl); Ion chromatography Biomass: according NEN-EN-ISO 16994 Coal: Own method	NEN-EN-ISO 16994
Determination of mercury (Hg); CV-AAS	Acc. NEN-EN-ISO16968
Determination of minor elements. As, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, V and Zn	eq.nen-en-iso16968

Other Analysis

Common

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Determination of bulk density (poured) bulk density	Acc.NEN-EN-ISO 17828
Determination of mechanical durability of pellets	NEN-EN-ISO 17831-1

Abbreviations:
acc: in accordance with
eq: Equivalent to