Handelsweg 70
2988 DB Ridderkerk
The Netherlands
T. +31 (0)10-28 23 292
e-mail: info@tlr.nl

INTERNATIONAL LABORATORIES

Analytical Report

Control Union Certifications Germany GmbH
Attn: . .
Bornitzstraße 73-75
D-10365 Berlin
Germany

Reportnr.	: **1782570 version 1**		
Sample Arrival Date	: 06-Oct-2023 11:41	Sampling Date *	: 22-Sep-2023
ReportDate Version	: **18-Oct-2023 17:20**	Samplesize (kg)	: 15
Packing	: Plastic, ambient	Seal / Seal Code	: Yes /

Sample information *

Disponent Number	: PRJ 875336	Product specification	: Woodpellets
		Reference	: KK/A1/2209
		AWB / BarCode	: 13009300109594
Disp. Remark	: Client: Brenvel Site Kamin Kashyrsk 1st May st, Building 144500 Kamin Kashyrsk, Volyn region Ukraine		

*** 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	5,30				%	Q	R
Moisture Airdry			8,46		%	Q	R
Ash	0,37	0,39	0,36		%	Q	R
Volatile matter incl. moisture.			86,40		%	Q	R
Volatile matter	80,64	85,15	77,94	85,48	%		
Fixed Carbon	13,69	14,46			%		
Gross Calorific Value	4698,0	4960,9	4541,2	4980,5	kcal/kg	Q	R
	19,67	20,77	19,01	20,85	GJ/mt		
	8456,3	8929,6	8174,1	8964,8	B.T.U.'s/Lb		
Nett Calorific Value (cV)	4376,1				kcal/kg	Q	
	18,32				GJ/mt		
	7877,0				B.T.U.'s/Lb		
	5,1				kWh/kg		
Nett Calorific Value (cP)	18,25				GJ/mt	Q	
Emissionfactor CO2 (cV)	96,90				t CO2/TJ		
Emissionfactor CO2 (cP)	97,31				t CO2/TJ		
Hydrogen	5,94	6,27	6,69	6,30	%	Q	R
Carbon	48,42	51,13	46,80	51,33	%	Q	R
Nitrogen.	0,07	0,07	0,06	0,07	%	Q	R
S. (Sulfer)	< 0,010	< 0,010	< 0,010	< 0,010	%	Q	R
Oxygen (by difference)				42,300	%		

Preparation

Common

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Preparation sample	B-wood preparation according NEN EN 14780 and NEN EN 15443				Q	R

Composition Determination

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Common

Parameter	Result (as received)	Result (on dry)	Result (as det)			
AFT. (oxid) DT	max value		1500	gr. C		R
Diameter pellets (n=25)	6,1			mm	Q	R
Length of pellets	10,1			mm	Q	R
Sieve < 3,15 mm.	0,47			%		R

Metal and other elements

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Cd (Cadmium)	0,147	0,155	0,142	mg/kg	Q	R
Pb (Lead)	0,13	0,14	0,13	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)	6,6	6,9	6,3	mg/kg		R

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Parameter	Result (as received)	Result (on dry)	Result (as det)			
Sieve < 5,6 mm			0,9	%		R

Other Analysis

Common

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Mechanical Durability	98,6			%	Q	R
Bulk density-	677			kg/m3	Q	R
Particle density			1,33	g/cm3		R
Category	Category S					R

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

Demanded 06-Oct-2023 by Control Union Certifications Germany GmbH
Analyses according to annex
P.W. Platteschor, Managing Director TLR International Laboratories

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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

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Method Description	Method Code
Determination of the amount of material passing through a sieve with 3,15 mm diameter round hole ISO 18846:2016	.

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Other Analysis

Common

Method Description	Method Code
Determination of bulk density (poured) bulk density	Acc.NEN-EN-ISO 17828
Determination of mechanical durability of pellets	NEN-EN-ISO 17831-1
Determination of Share of pellets with a length < 10 mm	ISO 18847

Abbreviations:

acc: in accordance with
eq: Equivalent to

Demanded 06-Oct-2023 by Control Union Certifications Germany GmbH
Analyses according to annex
P.W. Platteschor, Managing Director TLR International Laboratories