

Analytical Report

Control Union Certifications Germany GmbH

Attn: . .
Bornitzstraße 73-75
D-10365 Berlin
Germany

Reportnr.	: 1828149 version 1	Sampling Date	*: 02-Feb-2024
Sample Arrival Date	: 22-Feb-2024 14:14	Samplesize (kg)	: 15
ReportDate Version	: 01-Mar-2024 12:06	Seal / Seal Code	: No /
Packing	: Plastic, ambient		

Sample information *

Disponent Number	: 894171	Product specification	: Woodpellets
		Reference	: LVIV_2023_07_31
		AWB / BarCode	: 134991100492901

* 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	6,18			%	Q	R
Moisture Airdry			5,82	%	Q	R
Ash	0,49	0,52	0,49	%	Q	R
Volatile matter incl. moisture.			85,21	%	Q	R
Volatile matter	79,09	84,29	79,38	84,73	%	
Fixed Carbon	14,25	15,19		%		
Gross Calorific Value	4694,0	5003,2	4711,8	5029,3	kcal/kg	Q R
	19,65	20,95	19,73	21,06	GJ/mt	
	8449,3	9005,8	8481,3	9052,7	B.T.U.'s/Lb	
Nett Calorific Value (cV)	4373,6			kcal/kg	Q	
	18,31			GJ/mt		
	7872,5			B.T.U.'s/Lb		
	5,1			kWh/kg		
Nett Calorific Value (cP)	18,24			GJ/mt	Q	
Emissionfactor CO2 (cV)	97,56			t CO2/TJ		
Emissionfactor CO2 (cP)	97,96			t CO2/TJ		
Hydrogen	5,82	6,20	6,49	6,23	%	Q R
Carbon	48,72	51,92	48,90	52,19	%	Q R
Nitrogen.	0,20	0,22	0,20	0,22	%	Q R
S. (Sulfer)	< 0,010	< 0,010	< 0,010	< 0,010	%	Q R
Oxygen (by difference)				41,350	%	

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

Common Parameter	Result (as received)	Result (on dry)	Result (as det)
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Packing	: Plastic, ambient					
AFT. (oxid) DT				1410	gr. C	R
Diameter pellets (n=25)	6,2				mm	Q R
Length of pellets	11,2				mm	Q R
Sieve < 3,15 mm.	1,50				%	R
Metal and other elements						
Parameter	Result (as received)	Result (on dry)	Result (as det)			
Cd (Cadmium)	0,134	0,143	0,135	mg/kg	Q	R
Pb (Lead)	0,08	0,09	0,08	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)	7,5	7,9	7,5	mg/kg		R
Biogenic amines						
Parameter	Result (as received)	Result (on dry)	Result (as det)			
Sieve < 5,6 mm			2,6	%		R
Other Analysis						
Common						
Parameter	Result (as received)	Result (on dry)	Result (as det)			
Mechanical Durability	98,1			%	Q	R
Bulk density-	631			kg/m3	Q	R
Particle density			1,28	g/cm3		R
Share of pellets< 10mm			26,2	w %		R
Category	Category M					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

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

Determination of gross calorific value by bombcaloric method and calculation of net calorific value
Coal: NEN-ISO 1928, Solid Biofuels NEN-EN-ISO18125; secondary 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

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; secondary biofuels: NEN-EN 15402

Method Code

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NEN-EN-ISO 21404

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Acc. NEN-EN-ISO17829

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Metal and other elements

Method Description

Determination of Chlorine (Cl); Ion chromatography
Biomass: according NEN-EN-ISO 16994 Coal: Own method

Determination of mercury (Hg); CV-AAS

Determination of minor elements. As, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, V and Zn

Method Code

NEN-EN-ISO 16994

Acc. NEN-EN-ISO16968

eq.nen-en-iso16968

Biogenic amines

Method Description

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

Method Code

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Other Analysis

Common

Method Description

Determination of bulk density (poured) bulk density
Determination of mechanical durability of pellets
Determination of Share of pellets with a length < 10 mm

Method Code

Acc.NEN-EN-ISO 17828
NEN-EN-ISO 17831-1
ISO 18847

Abbreviations:

acc: in accordance with
eq: Equivalent to

Demanded 22-Feb-2024 by Control Union Certifications Germany GmbH
Analyses according to annex
P.W. Platteschor, Managing Director TLR International Laboratories

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