

## Analytical Report

### Control Union Certifications Germany GmbH

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

Reportnr. : **1789671 version 1**  
Sample Arrival Date : 27-Oct-2023 15:58  
ReportDate Version : **03-Nov-2023 17:08**  
Packing : Plastic, ambient

Sampling Date \* : 06-Oct-2023  
Samplesize (kg) : 15  
Seal / Seal Code : No /

#### Sample information \*

Disponent Number : 898446  
Product specification : Woodpellets  
Reference : Tayfun\_2023\_09\_28  
AWB / BarCode : niet duidelijke

Disp. Remark : Private Enyerprise Tayfun -Plus, 41  
Shashkevych street, 80530, v Ozhydiv, Lviv  
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	7,24			%		Q R
Moisture Airdry			7,26	%		Q R
Ash	0,41	0,44	0,41	%		Q R
Volatile matter incl. moisture.			83,92	%		Q R
Volatile matter	76,68	82,67	76,66	83,03	%	
Fixed Carbon	15,67	16,89		%		
Gross Calorific Value	4364,6	4705,2	4363,4	4726,2	kcal/kg	Q R
	18,27	19,70	18,27	19,79	GJ/mt	
	7856,2	8469,4	7854,1	8507,2	B.T.U.'s/Lb	
Nett Calorific Value (cV)	4061,3			kcal/kg		Q
	17,00			GJ/mt		
	7310,3			B.T.U.'s/Lb		
	4,7			kWh/kg		
Nett Calorific Value (cP)	16,93			GJ/mt		Q
Emissionfactor CO2 (cV)	100,10			t CO2/TJ		
Emissionfactor CO2 (cP)	100,50			t CO2/TJ		
Hydrogen	5,35	5,77	6,16	5,79	%	Q R
Carbon	46,41	50,03	46,40	50,26	%	Q R
Nitrogen.	< 0,05	< 0,05	< 0,05	< 0,05	%	Q R
S. (Sulfer)	0,010	0,011	0,010	0,011	%	Q R
Oxygen (by difference)				43,920	%	

#### 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

Demanded 27-Oct-2023 by Control Union Certifications Germany GmbH  
Analyses according to annex  
P.W. Platteschor, Managing Director TLR International Laboratories

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### Common

Parameter	Result (as received)	Result (on dry)	Result (as det)			
AFT. (oxid) DT			1480	gr. C		R
Diameter pellets (n=25)	6,2			mm	Q	R
Length of pellets	13,4			mm	Q	R
Sieve < 3,15 mm.	0,22			%		R

### Metal and other elements

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Cd (Cadmium)	0,030	0,032	0,030	mg/kg	Q	R
Pb (Lead)	0,12	0,13	0,12	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)	< 1,0	< 1,0	< 1,0	mg/kg		R

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Sieve < 5,6 mm			0,4	%		R

### Other Analysis

#### Common

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Mechanical Durability	98,2			%	Q	R
Bulk density-	671			kg/m3	Q	R
Particle density			1,25	g/cm3		R
Share of pellets< 10mm			20,5	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

##### 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

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