

## Analytical Report

### Energy Pellets Moerdijk BV

Attn: Mr. Hylko Brandsma  
Apolloweg 4 Harbour no. M189A  
4782 SB Moerdijk  
Netherlands

Reportnr. : **1026893 version 1**  
Product recognized as : Hout/Wood/Bois/Holz/Madera  
Product Specification : EPT. woodpellets. ENPlusA1. 2020  
Reference :  
AWB / BarCode : 118872669  
Packing : Plastic, ambient  
Sample Type : BIS

Disponent Number :  
Sampling Date : 18-Dec-2019  
Samplesize (kg) : 3,766  
Sealed / Seal Code : No /  
Sample Arrival Date : 19-Dec-2019 15:36  
ReportDate Version : **31-Dec-2019 14:35**

#### Composition Determination

Parameter	Result (as received)	Result (on dry)	Result (as det)	Result (dry ash free)			
Total Moisture	7,78				%		Q R
Moisture Airdry			6,90		%		Q R
Ash	0,17	0,18	0,17		%		Q R
Volatile matter incl. moisture.			86,70		%		Q R
Volatile matter	79,05	85,72	79,80	85,88	%		
Fixed Carbon	13,00	14,10			%		
Gross Calorific Value	4612,2	5001,3	4656,0	5010,5	kcal/kg		Q R
	19,31	20,94	19,49	20,98	GJ/mt		
Nett Calorific Value (cV)	8302,0	9002,3	8380,9	9019,0	B.T.U.'s/Lb		
	4284,6				kcal/kg		Q
	17,94				GJ/mt		
	7712,3				B.T.U.'s/Lb		
	5,0				kWh/kg		
Nett Calorific Value (cP)	17,86				GJ/mt		Q
Emissionfactor CO2 (cV)	98,07				t CO2/TJ		
Emissionfactor CO2 (cP)	98,49				t CO2/TJ		
Hydrogen	5,78	6,27	6,61	6,28	%		Q R
Carbon	47,97	52,02	48,43	52,12	%		Q R
Nitrogen.	< 0,05	< 0,05	< 0,05	< 0,05	%		Q R
S. (Sulfer)	< 0,010	< 0,010	< 0,010	< 0,010	%		Q R
Oxygen (by difference)				41,590	%		

#### 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)			
AFT. (oxid) DT			1480	gr. C		R
Diameter pellets (n=25)			6,1	mm		Q R
Length of pellets			10,8	mm		Q R

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Sieve < 3,15 mm.	< 0,1	%		R	
<b>Metal and other elements</b>					
<b>Parameter</b>	<b>Result (as received)</b>	<b>Result (on dry)</b>	<b>Result (as det)</b>		
Cd (Cadmium)	0,097	0,105	0,098	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)	7,7	8,4	7,8	mg/kg	R
<b>Other Analysis</b>					
<b>Common</b>					
<b>Parameter</b>	<b>Result (as received)</b>	<b>Result (on dry)</b>	<b>Result (as det)</b>		
H.L. weight			637,4	kg/m3	R
Mechanical Durability			99,4	%	Q R

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

Demanded 19-Dec-2019 by Energy Pellets Moerdijk BV  
 Analyses according to annex  
 Drs. ing. H. Janssens Director TLR International Laboratories



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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; acc EN-plus, 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 biomass: 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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Own method

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Acc. NEN-EN-ISO17829

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##### Metal and other elements

##### Method Description

Determination of chloride (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

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Acc. NEN-EN-ISO16968

eq.nen-en-iso16968

#### Other Analysis



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### Common

#### Method Description

Determination of mechanical durability of pellets

#### Method Code

NEN-EN-ISO 17831-1

### Abbreviations:

acc: in accordance with  
eq: Equivalent to

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