

Analytical Report

Control Union Poland Sp. z o.o.

Attn: Robert Knysak
al. Wojska Polskiego 25/907
65-950 Zielona Góra
Poland

Reportnr. : 624054 version 1	Disponent Number :
Product recognized as : Hout/Wood/Bois/Holz/Madera	Sampling Date : 16-Mar-2016
Product Specification : Wood pellets - Enplus test	Samplesize (kg) : 9,495
Reference :	Sealed / Seal Code : Yes / see remarks
AWB / BarCode :	Sample Arrival Date : 25-Mar-2016 15:21
Packing : Plastic, ambient	ReportDate Version : 13-Apr-2016 16:44
Sample Type : BIS	
Seller Unloader : TASK on request of Mr. Maciej Zdzieborski	Origin : Poland
Disp. Remark : TASK, Dworcowa Str.,28,62-280 Kiszkowo,Poland	

Composition Determination

Parameter	Amount (a.r.)	Amount (o.d.)	Amount (as det.)	Amount (d.a.f.)		
Total Moisture	4,96				%	Q
Moisture Airdry			5,88		%	Q
Ash	0,18	0,19	0,18		%	Q
Volatile matter incl. moisture.			86,56		%	Q
Volatile matter	81,47	85,72	80,68	85,89	%	
Fixed Carbon	13,39	14,09			%	
Gross Calorific Value	4713,1	4959,1	4667,2	4968,4	kcal/kg	Q
	19,73	20,76	19,54	20,80	GJ/mt	
	8483,6	8926,3	8401,0	8943,1	B.T.U.'s/Lb	
Nett Calorific Value (cV)	4395,8				kcal/kg	
	18,40				GJ/mt	
	7912,5				B.T.U.'s/Lb	
Nett Calorific Value (cP)	18,33				GJ/mt	
Emissionfactor CO2 (cV)	98,15				t CO2/TJ	
Emissionfactor CO2 (cP)	98,55				t CO2/TJ	
Hydrogen	5,89	6,20	6,49	6,21	%	Q
Carbon	49,26	51,83	48,78	51,93	%	Q
Nitrogen.	0,29	0,31	0,29	0,31	%	Q
S. (Sulfer)	0,01	0,01	0,01	0,01	%	Q
Oxygen (by difference)				41,54	%	

Composition Determination

Common

Parameter	Amount (a.r.)	Amount (o.d.)	Amount (as det.)		
AFT. (oxid) DT			1490	gr. C	
Diameter pellets (n=25)			6,1	mm	Q
Length of pellets			10,2	mm	Q
Sieve < 3,15 mm			0,4	%	

Metal and other elements

Parameter	Amount (a.r.)	Amount (o.d.)	Amount (as det.)

Demanded 25-Mar-2016 by Mr. Maciej Zdzieborski
Analyses according to annex
Drs. ing. H. Janssens Director TLR International Laboratories



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Cd (Cadmium)	0,219	0,231	0,217	mg/kg	Q
Pb (Lead)	0,06	0,06	0,06	mg/kg	Q
As (Arsenic)	< 0,040	< 0,040	< 0,040	mg/kg	Q
Hg (Mercury)	< 0,020	< 0,020	< 0,020	mg/kg	Q
Ni (Nickel)	< 3,0	< 3,0	< 3,0	mg/kg	Q
Cl (Chlorine)	< 0,005	< 0,005	< 0,005	%	Q
Cr.(Chromium)	< 5,0	< 5,0	< 5,0	mg/kg	
Cu.(Copper)	< 5,0	< 5,0	< 5,0	mg/kg	
Zn. (Zinc)	9,0	9,5	8,9	mg/kg	

Other Analysis

Common Parameter	Amount (a.r.)	Amount (o.d.)	Amount (as det.)		
Mechanical Durability			98,8	%	Q
Bulk density			661,00	kg/m3	Q

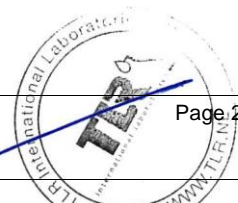
Preparation

Common Parameter	Amount (a.r.)	Amount (o.d.)	Amount (as det.)		
Preparation sample	Biomass preparation according NEN-EN14780				Q

Q - Analysis accredited by RvA

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ANNEX

Method Descriptions

Composition Determination

Common

Method Description

Determination of ash; gravimetric method
 Coal: NEN-ISO 1171 Biomass : EN-14775; Secondary bio fuels : NEN-EN-15403

Determination of carbon (C), nitrogen (N), hydrogen (H) with the element analyser
 Coal : NEN-ISO29541, Biomass : NEN-EN 15104, Secondary bio fuels NEN-EN 15407

Determination of fines; Sieve test on original material

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-EN14918; secondary biofuels NEN-EN15400

Determination of moisture in the analyse sample; gravimetric method
 Coal: NEN-ISO 11722;Biomass: NEN-EN14774-3; Secondary bio fuels : NEN-EN15414-3

Determination of Sulphur (S); NEN-EN 15289

Determination of the length and diameter of the woodpellets

Determination of total moisture in the sample; gravimetric method
 Coal: ISO-589 biomass: NEN-EN14774-1; Secondary bio fuels : NEN-EN15414-1

Determination of volatile matter content; gravimetric method
 Coal: NEN-ISO 562; Biomass: NEN-EN15148; secondary biofuels: NEN-EN 15402

Method Code

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Acc. NEN-EN 15149-2

Own method

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Eq. NEN-EN 16127:201

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Metal and other elements

Method Description

Deteminiation of Vanadium (V), Cobalt (Co), Nickel (Ni)

Determination of chloride (Cl);
 Destruction feeding stuffs: bomb calorimetric method; analysis: Ion chromatography
 Biomass: according EN-15289/DIN51727 Coal: Own method

Determination of lead (Pb); ICP-MS,

Determination of mercury (Hg); GFAAS,

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

Method Code

eq. NEN-EN 15297

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eq. NEN-EN 15297

cf NEN EN 15297

acc. NEN-15297

Other Analysis

Common

Method Description

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J.S.



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Determination of bulk density (poured) and tamped bulk density
Determination of mechanical durability of pellets

Acc.NEN-EN-ISO 17828
acc. NEN-EN 15210-1

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