

Analytical Report

Control Union Certifications Germany GmbH

Attn: . .
Dorotheastrasse 30
D-10318 Berlin
Germany

Reportnr. : **1698402 version 1**
Sample Arrival Date : 18-Jan-2023 10:00
ReportDate Version : **25-Jan-2023 12:37**
Packing : Plastic, ambient

Sampling Date * : 09-Jan-2023
Samplesize (kg) : 15
Seal / Seal Code : No /

Sample information *

Disponent Number :
Disp. Remark :
Product specification : woodpellets

* 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	7,28			%	Q	R
Moisture Airdry			6,49	%	Q	R
Ash	0,34	0,37	0,35	%	Q	R
Volatile matter incl. moisture			86,54	%	Q	R
Volatile matter	79,38	85,61	80,05	85,93 %		
Fixed Carbon	13,00	14,02		%		
Gross Calorific Value	4641,9	5006,4	4681,5	5025,1 kcal/kg	Q	R
	19,43	20,96	19,60	21,04 GJ/mt		
Nett Calorific Value (cV)	8355,4	9011,5	8426,7	9045,1 B.T.U.'s/Lb	Q	
	4317,5			kcal/kg		
	18,08			GJ/mt		
Nett Calorific Value (cP)	5,0			B.T.U.'s/Lb		
Emissionfactor CO2 (cV)	18,00			kWh/kg	Q	
Emissionfactor CO2 (cP)	90,32			GJ/mt		
	90,71			t CO2/TJ		
Hydrogen	5,77	6,23	6,55	6,25 %	Q	R
Carbon	44,52	48,02	44,90	48,20 %	Q	R
Nitrogen	0,13	0,14	0,13	0,14 %	Q	R
S. (Sulfer)	< 0,010	< 0,010	< 0,010	< 0,010 %	Q	R
Oxygen (by difference)				45,400 %		

Preparation

Common

Parameter	Result (as received)	Result (on dry)	Result (as det)		
Preparation sample	Biomass preparation in accordance with 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			1340	gr. C	R



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Diameter pellets (n=25)	6,3	mm	Q	R
Length of pellets	10,5	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)	0,142	0,154	0,144	mg/kg	Q	R
Pb (Lead)	0,06	0,06	0,06	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 (Chloride)	< 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)	7,9	8,5	8,0	mg/kg		R

Other Analysis

Common

Parameter	Result (as received)	Result (on dry)	Result (as det)			
Mechanical Durability	98,9			%	Q	R
Bulk density-	649			kg/m ³	Q	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; 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

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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Own method

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Acc. NEN-EN-ISO17829

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Method Code

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Acc. NEN-EN-ISO16968

eq.nen-en-iso16968

Other Analysis

Common

Method Description

Method Code

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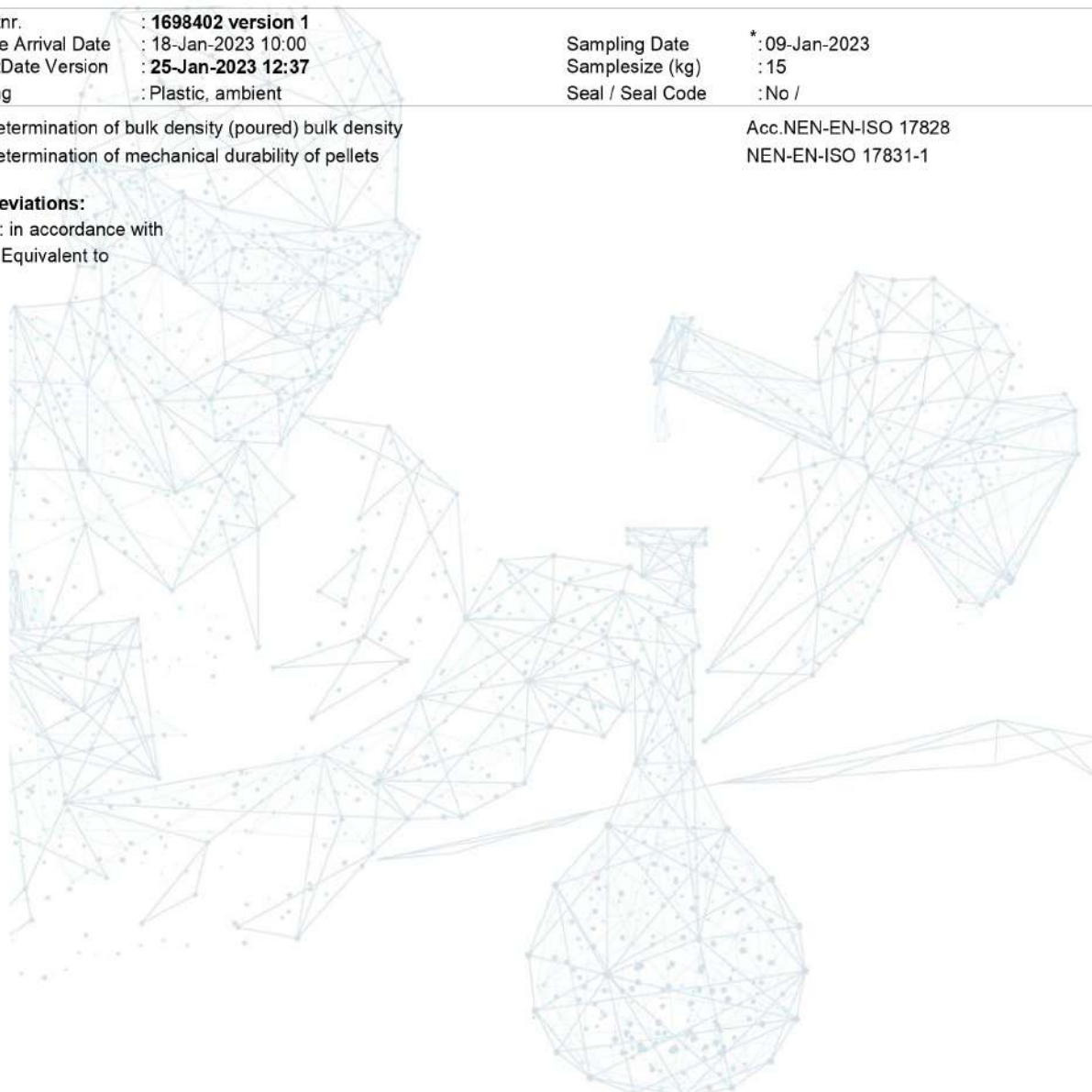
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Determination of bulk density (poured) bulk density
Determination of mechanical durability of pellets

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

Abbreviations:

acc: in accordance with
eq: Equivalent to



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