

## Analytical Report

### Control Union Certifications Germany GmbH

Attn: . .  
Dorotheastrasse 30  
D-10318 Berlin  
Germany

Reportnr. : **1271119 version 1**  
Sample Arrival Date : 05-Apr-2021 17:29  
ReportDate Version : **14-Apr-2021 12:53**  
Packing : Plastic, ambient  
Sampling Date \* : 05-Mar-2021  
Samplesize (kg) : 6,93

#### Sample information \*

Disponent Number : PRJ870263  
Sealed / Seal Code : Yes /  
Seller Unloader : Belozersky lespromkhoz/control union  
Product specification : Wood pellers 6 mm  
AWB / BarCode : GE527814625WW

\* Information supplied by customer (TLR takes no responsibility for this information).

#### Composition Determination

| Parameter                       | Result<br>(as received) | Result<br>(on dry) | Result<br>(as det) | Result<br>(dry ash free) |   |   |
|---------------------------------|-------------------------|--------------------|--------------------|--------------------------|---|---|
| Total Moisture                  | 7,78                    |                    |                    | %                        |   | O |
| Moisture Airdry                 |                         |                    | 5,85               | %                        | Q | R |
| Ash                             | 0,26                    | 0,28               | 0,26               | %                        | Q | R |
| Volatile matter incl. moisture. |                         |                    | 86,07              | %                        | Q | R |
| Volatile matter                 | 78,58                   | 85,21              | 80,23              | 85,45 %                  |   |   |
| Fixed Carbon                    | 13,39                   | 14,51              |                    | %                        |   |   |
| Gross Calorific Value           | 4513,5                  | 4894,3             | 4608,1             | 4907,9 kcal/kg           | Q | R |
|                                 | 18,90                   | 20,49              | 19,29              | 20,55 GJ/mt              |   |   |
| Nett Calorific Value (cV)       | 8124,3                  | 8809,7             | 8294,7             | 8834,2 B.T.U.'s/Lb       |   |   |
|                                 | 4191,1                  |                    |                    | kcal/kg                  | Q |   |
|                                 | 17,55                   |                    |                    | GJ/mt                    |   |   |
|                                 | 7544,0                  |                    |                    | B.T.U.'s/Lb              |   |   |
|                                 | 4,9                     |                    |                    | kWh/kg                   |   |   |
| Nett Calorific Value (cP)       | 17,47                   |                    |                    | GJ/mt                    | Q |   |
| Emissionfactor CO2 (cV)         | 98,62                   |                    |                    | t CO2/TJ                 |   |   |
| Emissionfactor CO2 (cP)         | 99,05                   |                    |                    | t CO2/TJ                 |   |   |
| Hydrogen                        | 5,68                    | 6,16               | 6,45               | 6,17 %                   | Q | R |
| Carbon                          | 47,19                   | 51,17              | 48,18              | 51,31 %                  | 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)          |                         |                    |                    | 42,470 %                 |   |   |

#### Preparation

##### Common

| Parameter          | Result<br>(as received)                                    | Result<br>(on dry) | Result<br>(as det) |  |     |
|--------------------|--|--------------------|--------------------|--|-----|
| Preparation sample | B-wood preparation according NEN EN 14780 and NEN EN 15443 |                    |                    |  | Q R |

#### Composition Determination

##### Common

| Parameter | Result<br>(as received) | Result<br>(on dry) | Result<br>(as det) |
|-----------|-------------------------|--------------------|--------------------|
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|                         |      |      |       |   |   |
|-------------------------|------|------|-------|---|---|
| AFT. (oxid) DT          |      | 1500 | gr. C |   | R |
| Diameter pellets (n=25) | 6,2  |      | mm    | Q | R |
| Length of pellets       | 15,1 |      | mm    | Q | R |
| Sieve < 3,15 mm.        | 0,1  |      | %     |   | R |

### Metal and other elements

| Parameter     | Result<br>(as received) | Result<br>(on dry) | Result<br>(as det) |       |   |   |
|---------------|-------------------------|--------------------|--------------------|-------|---|---|
| Cd (Cadmium)  | 0,057                   | 0,061              | 0,058              | mg/kg | Q | R |
| Pb (Lead)     | 0,05                    | 0,05               | 0,05               | 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)    | 9,8                     | 10,6               | 10,0               | mg/kg |   | R |

### Other Analysis

#### Common

| Parameter             | Result<br>(as received) | Result<br>(on dry) | Result<br>(as det) |       |   |   |
|-----------------------|-------------------------|--------------------|--------------------|-------|---|---|
| Mechanical Durability | 99,2                    |                    |                    | %     | Q | R |
| Bulk density          | 678                     |                    |                    | kg/m3 | Q | R |

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



## Analytical Report

|                     |                     |                 |                |
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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 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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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

##### Common

##### Method Description

##### Method Code

Demanded 05-Apr-2021 by Control Union Certifications Germany GmbH  
 Analyses according to annex  
 Drs. ing. H. Janssens Director TLR International Laboratories





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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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