For the production of wood pellets produced by

## AS Tartu Graanul, Tartu, ESTONIA

certified according to **ENplus® A1** with the ID number: **EE008**

we confirm the following test results analysed within the inspection 2022 valid until the inspection in 2023.

| Samples 2022119 | | | Pellets 6mm | Pellets 8mm | Limit values according ENplus® | |
|---|---|---|---|---|---|---|
| | Standard | unit | | | Class A1 | Class A2 |
| mechanical durability | ISO 17831-1:2015 | [%] | 99,1 | 98,9 | ≥ 98,0 | ≥ 97,5 |
| bulk density (ar) | ISO 17828:2015 | [kg/m³] | 680 | 690 | 750≥BD≥600 | 750≥BD≥600 |
| moisture content | ISO 18134-2:2017 | [%] | 7,0 | n.d. | ≤ 10 | ≤ 10 |
| ash content 550°C(db)** | ISO 18122:2015 | [%] | 0,3 | n.d. | ≤ 0,7 | ≤ 1,2 |
| net calorific value (ar) | ISO 18125:2017 | [MJ/kg] | 17,4 | n.d. | ≥ 16,5 | ≥ 16,5 |
| net calorific value (ar) | ISO 18125:2017 | [kWh/kg] | 4,8 | n.d. | ≥ 4,6 | ≥ 4,6 |
| net calorific value (db) | ISO 18125:2017 | [MJ/kg] | 18,9 | n.d. | - | - |
| net calorific value (db) | ISO 18125:2017 | [kWh/kg] | 5,2 | n.d. | - | - |
| gross calorific value (ar) | ISO 18125:2017 | [MJ/kg] | 18,9 | n.d. | - | - |
| gross calorific value (ar) | ISO 18125:2017 | [kWh/kg] | 5,2 | n.d. | - | - |
| Sulphur content (db) | ISO 16994:2016*** | [%] | 0,015 | n.d. | ≤ 0,04 | ≤ 0,05 |
| Chlorine content (db) | ISO 16994:2016*** | [%] | < 0,005 | n.d. | ≤ 0,02 | ≤ 0,02 |
| Nitrogen content (db) | ISO 16948:2015 | [%] | 0,09 | n.d. | ≤ 0,30 | ≤ 0,50 |
| pressing aid / additives | - | [%] | 0 | 0 | ≤ 1,8 | ≤ 1,8 |
| **dimensions** | | | | | | |
| fines (< 3,15 mm) | ISO 18846:2016 | [%] | 0,1 | 0,1 | ≤ 0,5* / ≤ 1,0 | ≤ 0,5* / ≤ 1,0 |
| length (40 ≤ L ≤ 45 mm) | ISO 17829:2015 | [%] | 0 | 0 | ≤ 1 | ≤ 1 |
| length ( > 45 mm) | ISO 17829:2015 | [amount] | 0 | 0 | 0 | 0 |
| diameter | ISO 17829:2015 | [mm] | 6 | 8 | 6 or 8 ± 1 | 6 or 8 ± 1 |
| **heavy metals** (quantification according to ISO 17294-2:2016) | | | | | | |
| Chromium (db) | ISO 16968:2015 | [mg/kg] | < 1 | n.d. | ≤ 10 | ≤ 10 |
| Copper (db) | ISO 16968:2015 | [mg/kg] | 1,2 | n.d. | ≤ 10 | ≤ 10 |
| Zinc (db) | ISO 16968:2015 | [mg/kg] | 11,0 | n.d. | ≤ 100 | ≤ 100 |
| Lead (db) | ISO 16968:2015 | [mg/kg] | < 0,5 | n.d. | ≤ 10 | ≤ 10 |
| Mercury (db) | ISO 16968:2015 | [mg/kg] | < 0,075 | n.d. | ≤ 0,1 | ≤ 0,1 |
| Cadmium (db) | ISO 16968:2015 | [mg/kg] | < 0,1 | n.d. | ≤ 0,5 | ≤ 0,5 |
| Arsenic (db) | ISO 16968:2015 | [mg/kg] | < 0,5 | n.d. | ≤ 1 | ≤ 1 |
| Nickel (db) | ISO 16968:2015 | [mg/kg] | < 1 | n.d. | ≤ 10 | ≤ 10 |
| **ash melting behaviour** (oxidizing atmosphere, ash preparation at 815°C) | | | | | | |
| shrinking temperature SST | CEN/TS 15370-1:2006 | [°C] | 1060 | n.d. | - | - |
| deformation temperature DT | CEN/TS 15370-1:2006 | [°C] | 1470 | n.d. | ≥ 1200 | ≥ 1100 |
| hemisphere temperature HT | CEN/TS 15370-1:2006 | [°C] | > 1550 | n.d. | - | - |
| flow temperature FT | CEN/TS 15370-1:2006 | [°C] | > 1550 | n.d. | - | - |

* for bags or sealed big bags, ar…as received, db...dry basis

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