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AB 053

Test report

No. DBL-2024-1767-01-BLS of 24.05.2024

	NAME AND SURNAME POSITION	DATE, SIGNATURE
Authorized by	Małgorzata Walkowiak, M.Sc.Eng. Senior specialist in solid biofuels testing	24.05.2024

SUBJECT OF THE ORDER	Quality testing of wood pellets
ORDER NO.	A/DBL/BLS/1767/2024

NAME AND ADDRESS OF THE CUSTOMER

CUSTOMER
VYROBNYCHO-KOMERTSIINE PYVATNE PIDPRYIEMSTVO ”AHROPROPROPROMTECHTSENTR” Teatralna 15, 45000 Kovel

IDENTYFICATION OF THE TEST SAMPLE

TEST SAMPLE	
Name	Wood pellets

DELIVERY DASTE OF SAMPLE	08.05.2024
PERFORMANCE DATE	08 – 24.05.2024
PLACE OF TESTING	Laboratory headquarters
OPERATORS	Dawid Matusiak, M.Sc.Eng. Jacek Pawłowski, M.Sc. Dariusz Radoński, B.Eng. Klaudia Sikorska

1. TEST METHODS

Name of the test	Document	Method status (A/NA)*
Total moisture	EN ISO 18134-2:2017	A
Analytical moisture	EN ISO 18134-3:2015	A
Calorific value	EN ISO 18125:2017	A
Volatile matter	PN-EN ISO 18123:2016-01	A
Content of carbon, hydrogen and nitrogen	EN ISO 16948:2015	A
Content of sulfur and chlorine	EN ISO 16994:2016	A
Content of oxygen	By difference	NA
Length and diameter of pellets	EN ISO 17829:2016	A
Bulk density	EN ISO 17828:2016	A
Particle density	EN ISO 18847:2016	A
Fines content (< 3.15 mm)	EN ISO 18846:2016	A
Fraction < 5.6 mm	EN ISO 18846:2016	NA
Mechanical durability of pellets	EN ISO 17831-1:2016	A
Minor elements	EN ISO 16968:2015	A

*A – accredited method; NA – non-accredited method

2. EQUIPMENT OF THE TEST STANDS

Name	Type	Producer	Lab.No.
Analytical balance	LE26P-0CE	SARTORIUS	M7/2
Analytical balance	CPA225D-0CE	SARTORIUS	M8/57
Laboratory balance	PS 6000/C/2	RADWAG	M3/50
Laboratory drier	RF115	BINDER	M1/47
Calorimeter	C6000	IKA	M6/83
Elemental analyzer	Flash EA 1112	Thermo ELECTRON CORPORATION	M7/8
Furnace	FCF 7SM/pl	CZYLOK	M2/4
Ionic chromatograph	ICS-1100	Thermo Scientific	M8/54
Laboratory balance	WLC 6/F1/R	RADWAG	M9/46
Pellets durability tester	TUMBLER 3000	BIOENERGY ANLAGENPLANUNG	M10/42
Sieve 3.15 mm	-	RETSCH	M9/34
Sieve 5.6 mm	-	Haver&Boecker	M9/128
Measuring container 5 dm^3	-	ANDRITZ	M4/26
Caliper	SD-10	BAKER	M3/14
Microwave oven	MARS 6	CEM CORPORATION	M13/80
Atomic Absorption Spectrometer	280FS AA	AGILENT TECHNOLOGIES	M13/66
Atomic Absorption Spectrometer	280Ze AA	AGILENT TECHNOLOGIES	M13/67
Mercury analyzer	DMA80	Milestone	M13/117

3. DESCRIPTION OF TEST SAMPLE

The object of the assessment was a sample of wood pellets. The sample was taken by the customer and delivered to the laboratory of Łukasiewicz Research Network - Poznań Institute Of Technology on 8th May 2024.

Identification number: A-1767/2024.

4. TEST RESULTS

Parameter	Unit	Value	Uncertainty [±]
Diameter	mm	6.2	0.1
Length	mm	18.5	10.3
Moisture $_{ar}$	w-%	6.4	0.2
Mechanical durability $_{ar}$	w-%	99.1	0.1
Fines (< 3.15 mm) $_{ar}$	w-%	0.27	0.03
Fraction < 5.6 mm $_{ar}$	w-%	0.40	0.01
Bulk density $_{ar}$	kg/m^3	663	8
Particle density $_{ar}$	g/cm^3	1.27	0.04
Volatile matter $_{d}$	w-%	84.7	2.5
Gross calorific value $_{d}$	MJ/kg	20.78	0.06
Net calorific value $_{ar}$	MJ/kg kWh/kg	17.96 4.99	0.08 0.02
Carbon $_{d}$	w-%	50.7	0.36
Hydrogen $_{d}$	w-%	6.53	0.16
Nitrogen $_{d}$	w-%	0.18	0.01
Sulphur $_{d}$	w-%	0.006	0.001
Chlorine $_{d}$	w-%	0.018	0.002
Oxygen $_{d}$	w-%	42.27	-
Arsenic $_{d}$	mg/kg	< 0.1	-
Cadmium $_{d}$	mg/kg	0.14	0.02
Chromium $_{d}$	mg/kg	< 0.5	-
Copper $_{d}$	mg/kg	1.02	0.02
Lead $_{d}$	mg/kg	< 0.5	-
Mercury $_{d}$	mg/kg	0.0025	0.0003
Nickel $_{d}$	mg/kg	< 0.5	-
Zinc $_{d}$	mg/kg	3.18	0.01

d - dry ar - as received

5. ADDITIONAL INFORMATION

1. Test results presented in this Report refer to the tested samples only.
2. In the case of samples taken by the client, the Laboratory is not responsible for the identification and representativeness of the object, method and place of collection.
3. The expanded uncertainty was determined for coverage factor k = 2 and 95% confidence level. The measurement uncertainty does not take into account the uncertainty component associated with the sampling.
4. Without written consent of the Laboratory the Report may not be reproduced in any other form than in its entirety.

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