HEP PROIZVODNJA

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TEST

CENTRAL LABORATORY FOR CHEMICAL ANALYSIS
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LABORATORY REPORT no. CKTL 110/23

Date: 7th April 2023

CUSTOMER SAMPLE CODE:	**A1_ 60123003**
SAMPLE TYPE:	**Wood pellets**
CUSTOMER NAME AND ADRESS:	**TÜV NORD Adriatic d.o.o., Bani 110 • 10010 Zagreb**
CLIENT NAME:	**Lukić wood d.o.o.**
SAMPLE QUANTITY:	**15 kg**
SAMPLING DATE AND TIME:	**10th March 2023, 13:00**
SAMPLE DELIVERED BY:	**TÜV NORD Adriatic d.o.o.**
DELIVERY DATE:	**20th March 2023**
TESTING PERIOD:	**20th March - 07th April 2023**

TEST RESULTS:

No	*Property*	*Units*	*Test methods*	*Results*		*Relative UM (%)*	*ENplus® quality class*	*The standard limits for the ENplus® parameters*		
				Dry	*As received*			ENplus® A1	ENplus® A2	ENplus ® B
1.	**Dimension*F (D&L)**	mm	HRN EN ISO 17829:2015	**Diametar:**	**6,1**	**0,8**	**A1**	**6 ± 1, 8 ± 1**		
				Length:	**11,6**	**2,6**	**A1**	**3,15 ≤ L ≤ 40**		
2.	**Moisture*F (M)**	w-%	HRN EN ISO 18134-1:2022	-	**5,3**	**8,3**	**A1**	**≤ 10,0**		
3.	**Ash*F (A)**	w-%	HRN EN ISO 18122:2015	**0,48**	**0,45**	**2,2**	**A1**	**≤ 0,70** (d)	**≤ 1,20** (d)	**≤ 2,0** (d)
4.	**Mechanical durability*F (DU)**	w-%	HRN EN ISO 17831-1:2016	-	**98,4**	**2,4**	**A1**	**≥ 98,0**	**≥ 97,5**	
5.	**Fines*F (F)**	w-%	HRN EN ISO 18846:2016	-	**0,02**	**3,3**	**A1**	**≤ 1,0** 1) **≤ 0,5** 2)		
6.	**Net calorific value *F**	kWh/kg	HRN EN ISO 18125:2017	**5,11**	**4,81**	**0,2**	**A1**	**≥ 4,6** (ar)		
7.	**Bulk density *F (BD)**	kg/m³	HRN EN ISO 17828:2016	-	**690**	**2,2**	**A1**	**600 ≤ BD ≤ 750**		
8.	**Particle density*F(DE)**	kg/m³	HRN EN ISO 18847:2016	-	**1330**	**0,75**	-	-		
9.	**Coarse fines (3,15 mm ≤FP ≤ 5,6 mm)**	w-%	HRN EN ISO 18846:2016	-	**0,5**	**3,3**	-	-		
10.	**Nitrogen content*F (N)**	w-%	HRN EN ISO 16948:2015	**0,20**	**0,19**	**4,52**	**A1**	**≤ 0,3** (d)	**≤ 0,5** (d)	**≤ 1,0** (d)
11.	**Sulphur content*F (S)**	w-%	HRN EN ISO 16994:2016	**0,019**	**0,018**	**6,407**	**A1**	**≤ 0,04** (d)		
12.	**Chlorine content*F (Cl)**	w-%	HRN EN ISO 16994:2016	**0,004**	**0,004**	**7,355**	**A1**	**≤ 0,02** (d)		**≤ 0,03**(d)

13.	**Arsenic content*F¤(As)**	mg/kg	HRN EN ISO 16968:2015	**0,040**	**0,038**	**2,57**	**A1**	**≤ 1** (d)
14.	**Cadmium content*F¤ Cd)**	mg/kg	HRN EN ISO 16968:2015	**< 0,040**	**< 0,040**	**7,25**	**A1**	**≤ 0,5** (d)
15.	**Chromium content*F¤(Cr)**	mg/kg	HRN EN ISO 16968:2015	**0,594**	**0,562**	**2,63**	**A1**	**≤ 10** (d)
16.	**Copper content*F¤(Cu)**	mg/kg	HRN EN ISO 16968:2015	**1,64**	**1,55**	**0,34**	**A1**	**≤ 10** (d)
17.	**Lead content*F¤(Pb)**	mg/kg	HRN EN ISO 16968:2015	**0,260**	**0,246**	**0,64**	**A1**	**≤ 10** (d)
18.	**Mercury content*F¤(Hg)**	mg/kg	HRN EN ISO 16968:2015	**< 0,005**	**< 0,005**	**6,67**	**A1**	**≤ 0,1** (d)
19.	**Nickel content*F¤ (Ni)**	mg/kg	HRN EN ISO 16968:2015	**< 0,240**	**< 0,240**	**2,15**	**A1**	**≤ 10** (d)
20.	**Zinc content*F¤(Zn)**	mg/kg	HRN EN ISO 16968:2015	**1,16**	**1,10**	**1,70**	**A1**	**≤ 100** (d)

Ash melting behaviour *F¤ -Characteristic temperatures (oxidation atmosphere)							***ENplus® quality class***		
		Units	***Test methods***	**Results**	***Relative UM (%)***	***ENplus® quality class***	**ENplus A1**	**ENplus A2**	**ENplus B**
21.	**SST** – Shrinkage starting temperature *F¤	°C	HRN EN ISO 21404: 2020	**1250**	**0,1**				
22.	**DT** – Deformation temperature *F¤			**1350**	**0,1**	**A1**	**≥ 1200**	**≥ 1100**	
23.	**HT** – Hemisphere temperature *F¤			**>1490**	**0,1**				
24.	**FT** – Flow temperature *F¤			**>1490**	**0,1**				

NOTE: [1] at factory gate or when loading truck for deliveries to end-users (Part Load Delivery and Full Load Delivery)
[2] at factory gate, when filling pellet bags or sealed Big Bags.
*F¤ accredited methods within flexible scope according HRN EN ISO/IEC 17025:2017 standard

- Measurement uncertainties are calculated, but not taken into account for determination of ENplus® quality class.
- Statements of conformity with ENplus® quality classes are reported according to Binary Statement for Simple Acceptance Rule (ILAC-G8:09/2019).
- The test results refer only to the tested samples.
- The test report or its parts cannot be reproduced, except in whole, with the approval of the Head of laboratory.

STATEMENT OF CONFORMITY:

All tested parameters **meet ENplus®** requirements for the A1 class.

Test report approved by:
Head of laboratory:
dr. sc. Marija Trkmić, dipl. ing.

THE END OF THE REPORT