

REPORT

Contract no.	12557/2024/2 – KW	14.06.2024 RES/MID
Customer:	UAB Graanul Invest Artoju 3c LITHUANIA; 62175 Alytus	
Subject:	Testing of wood pellets according to <ul style="list-style-type: none">• ENplus® – ST 1001, ST 1002 & ST 1003• DINplus – Certification Scheme Wood Pellets class A1 for the site LITHUANIA, 62175 Alytus, Artoju 3c	
Date of contract:	21.04.2023	
Date of sample delivery:	22.05.2024	
Date of service:	May - June 2024	
Period of validity:	--	
Pages:	4	
Enclosures:	--	

1. Contract

According to the assignment of the contract with the company UAB Graanul Invest dated 21.04.2023 the pellet quality of the provided sample(s) was tested according to:

- ENplus® – ST 1001, ST 1002 & ST 1003
(ENplus® ID: LT 006; Certification body: Holzforschung Austria)
- DINplus – Certification Scheme Wood Pellets class A1 (November 2021)
(DINplus Reg.-No.: 7A157; Certification body: DIN CERTCO)

2. Test material

The following sample(s) taken in the course of order (12557/2024; 12507/2024) was/were submitted to the laboratory of Holzforschung Austria.

sample number	product	size of sample; packaging	sample delivery (date, transport)
12557/2024	pellets, 6 mm, A1, bagged	15 kg / plastic bag	22.05.2024 (via postal service)

3. Laboratory test

3.1. Test methods

The laboratory tests for proof of conformity of the pellet quality with the requirements of EN ISO 17225-2 were carried out at Holzforschung Austria (1), AT-1030 Vienna and at BEA Institut für Bioenergie GmbH (2), AT-1150 Vienna.

ISO 16948 (C/H/N) ²	EN ISO 18122 (ash) ¹
EN ISO 16968 (minor elements) ¹	EN ISO 18125 (net calorific value) ¹
EN ISO 16994 (chlorine, sulfur) ¹	EN ISO 18134-2 (moisture) ¹
EN ISO 17828 (bulk density) ¹	EN ISO 5370/EN ISO 18846 (fines) ¹
EN ISO 17829 (dimensions) ¹	EN ISO 18847 (particle density) ¹
EN ISO 17831-1 (mech. durability) ¹	ISO 21404 (ash melting behaviour) ²

There is no accreditation available for testing according to EN ISO 5370 and EN ISO 18847 at the moment.

All the above-mentioned standards were applied in the current version.

3.2. Test results

3.2.1. Sample 12557/2024_

Parameter	Unit	Reference state	Result	Requirements according to		
				DINplus	ENplus® A1	ENplus® A2
Diameter, D	mm	ar	6,1	6 ± 1 (8 ± 1)	6 ± 1 (8 ± 1)	6 ± 1 (8 ± 1)
Length, L	mm	ar	12,5 (6 - 22)	3,15 ≤ L ≤ 40	3,15 ≤ L ≤ 40	3,15 ≤ L ≤ 40
Moisture, M	%	ar	3,5	≤ 10	≤ 10,0	≤ 10,0
Ash, A	%	d	0,39*	≤ 0,6	≤ 0,70	≤ 1,20
Ash deformation temperature, DT	°C	d	1480	≥ 1200	≥ 1200	≥ 1100
Mechanical durability, DU	%	ar	98,9	≥ 98,0	≥ 98,0	≥ 97,5
Fines, F (< 3,15 mm) bagged pellets	%	ar	0,39	≤ 0,5	≤ 0,5	≤ 0,5
Coarse fines, FP (3,15 mm ≤ FP < 5,6 mm) bagged pellets	%	ar	0,49	--	to be stated	to be stated
Net calorific value, Q (q _{p,net,ar})	MJ/kg	ar	18,4	≥ 16,5	≥ 16,5	≥ 16,5
Net calorific value, Q (q _{p,net,ar})	kWh/kg	ar	5,1	≥ 4,6	≥ 4,6	≥ 4,6
Gross calorific value, q _{v,gr}	MJ/kg	ar	19,8	--	--	--
Gross calorific value, q _{v,gr}	kWh/kg	ar	5,5	--	--	--
Bulk density, BD	kg/m ³	ar	720	600 ≤ BD ≤ 750	600 ≤ BD ≤ 750	600 ≤ BD ≤ 750
Particle density	g/cm ³	ar	1,33	--	to be stated	to be stated
Nitrogen, N	%	d	0,05	≤ 0,3	≤ 0,3	≤ 0,5
Sulfur, S	%	d	<0,005	≤ 0,04	≤ 0,04	≤ 0,04
Chlorine, Cl	%	d	<0,005	≤ 0,02	≤ 0,02	≤ 0,02
Arsenic, As	mg/kg	d	<0,4	≤ 1	≤ 1	≤ 1
Cadmium, Cd	mg/kg	d	0,1	≤ 0,5	≤ 0,5	≤ 0,5
Chromium, Cr	mg/kg	d	0,4	≤ 10	≤ 10	≤ 10
Copper, Cu	mg/kg	d	0,7	≤ 10	≤ 10	≤ 10
Lead, Pb	mg/kg	d	<0,3	≤ 10	≤ 10	≤ 10
Mercury, Hg	mg/kg	d	<0,02	≤ 0,1	≤ 0,1	≤ 0,1
Nickel, Ni	mg/kg	d	<0,2	≤ 10	≤ 10	≤ 10
Zinc, Zn	mg/kg	d	7,7	≤ 100	≤ 100	≤ 100

ar ... as received

d ... dry basis

* ... the second decimal place is not verified by the test method but is stated due to formal reasons to meet the requirements of ENplus

The test results of the sample(s) taken in the course of the order (12557/2024; 12507/2024) meet the requirements of ENplus® ST 1001 quality class ENplus® A1, 6 mm and of DINplus – Certification Scheme Wood Pellets class A1 (November 2021).


HOLZFORSCHUNG AUSTRIA

Ing. Irene Spitaler
Authorisation to sign

Stephanie Reitbauer, BSc
Technical execution

This report was approved electronically in accordance with an internal HFA process by the designated authorised signatory, traceable and documented.

Accreditation is given for the following procedures.
It is not allowed to use included accreditation marks for own purposes.

Accreditation mark	Type of accreditation	Procedure/s
	Testing	<ul style="list-style-type: none"> • EN ISO 16968 • EN ISO 16994 • EN ISO 17828 • EN ISO 17829 • EN ISO 17831-1 • EN ISO 18122 • EN ISO 18125 • EN ISO 18134-2 • EN ISO 18846

The results and statements given in this document relate only to the tested materials as received, the present information and the state of the art at the time of investigation.

The conformity assessment of the results is subject to the shared-risk approach.

Publication in excerpts is only permitted with the written approval of Holzforschung Austria.