

ENplus

**Quality Certification Scheme
For Wood Pellets**



ENplus Handbook

For countries not managed by any national licensor/supporter

**Part 3: Pellet Quality
Requirements**

Version 3.0, August 2015

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This Handbook is only valid for countries not managed by any National Licenser/supporter.

The European Pellet Council (EPC) is responsible for the implementation of ENplus and can grant *Certified Companies* the right to use the ENplus certification seals for all the countries that are not covered by any national pellet association. A list of these national pellet associations, either managing ENplus (National Licenser) or supporting the development of ENplus (National supporting association) in their respective countries, are listed on www.enplus-pellets.eu

PREFACE

This document is part of the *ENplus Handbook, Version 3* defining the rules for the ENplus Quality Certification Scheme for Wood Pellets. The different parts of the handbook are:

- Part 1: General
- Part 2: Certification Procedure
- Part 3: Pellet Quality Requirements
- Part 4: Sustainability Requirements
- Part 5: Scheme Organisation
- Part 6: Schedule of Fees

The current versions of these parts are published on the international website of ENplus [www.enplus-pellets.eu].

General information about the scheme as well as a definition of terms and normative references can be found in Part 1 – General.

This document, part 3 (version 3.0) of the ENplus Handbook, contains information about the following topics:

- ENplus quality classes
- Requirements for wood raw materials
- Requirements for additives

National Licensers will publish national versions of the *Handbook*. *Certified companies* have to follow the rules of the *Handbook* issued by the *Competent Management*.

In case of any dispute about the regulation defined in the *Handbook*, the regulation of the Master-Handbook applies (exception: national regulation).

Terms written in italic characters are defined in the section “Definitions of terms” in part 1.

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NORMATIVE REFERENCES

CEN/TC 15370-1: Solid biofuels - Method for the determination of ash melting behaviour - Part 1: Characteristic temperatures method

EN 14778: Solid biofuels - Sampling

EN 14961-2: Solid biofuels – Fuel specification and classes – Part 2: Wood pellets for non-industrial use

ISO 16948: Solid biofuels - Determination of total content of carbon, hydrogen and nitrogen contents

ISO 16968: Solid biofuels - Determination of minor elements

ISO 16994: Solid biofuels - Determination of total content of sulphur and chlorine

ISO 17225-1: Solid biofuels - Fuel specifications and classes - Part 1: General requirements

ISO 17225-2: Solid biofuels - Fuel specifications and classes - Part 2: Graded wood pellets

ISO 17828: Solid biofuels - Determination of bulk density

ISO 17829: Solid Biofuels - Determination of length and diameter of pellets

ISO 17831-1: Solid biofuels - Determination of mechanical durability of pellets and briquettes - Part 1: Pellets

ISO 18122: Solid biofuels - Determination of ash content

ISO 18125: Solid biofuels - Determination of calorific value

ISO 18134: Solid biofuels - Determination of moisture content -

ISO 18846: Solid biofuels - Determination of fines content in quantities of pellets

Note: Until the ISO analysis standards are published, analyses shall be performed according to related CEN standards.

1 COMING INTO FORCE

The regulations defined in part 3 of the *ENplus Handbook*, version 3.0 will come into force with its publication on 1st of August 2015.

Companies that are already certified at this point of time may continue to produce and trade pellets with the specifications defined in version 2.0 of the *ENplus Handbook* until 31st of December 2015, referring to the European standard EN 14961-2 in their delivery papers and on their bag design.

A longer transition period will be implemented for the use of the bag design and for the use of the previous *Certification Seal* on delivery notes, promotion material etc. (except trucks), this period ends on 31st of July 2016.

Companies certified after 31st of July 2015 shall comply with the requirements defined in this document, part 3 of the *ENplus Handbook*, version 3.

From 1st of January 2016 the *Inspection Bodies* and *Certification Bodies* will only check the compliance of companies with the requirements stated in this document, part 3 of the *ENplus Handbook*, version 3.

2 QUALITY CLASSES

The ENplus certification scheme defines three pellet quality classes. They are based on the classes of ISO 17225-2 and are named:

- ENplus A1
- ENplus A2
- ENplus B

Table 1 provides an overview of pellet properties and the related threshold values.

Table 1: Threshold values of the most important pellet parameters.

Property	Unit	ENplus A1	ENplus A2	ENplus B	Testing standard ¹¹⁾
Diameter	mm	6 ± 1 or 8 ± 1			ISO 17829
Length	mm	3,15 < L ≤ 40 ⁴⁾			ISO 17829
Moisture	w-% ²⁾	≤ 10			ISO 18134
Ash	w-% ³⁾	≤ 0,7	≤ 1,2	≤ 2,0	ISO 18122
Mechanical Durability	w-% ²⁾	≥ 98,0 ⁵⁾	≥ 97,5 ⁵⁾		ISO 17831-1
Fines (< 3,15 mm)	w-% ²⁾	≤ 1,0 ⁶⁾ (≤ 0,5 ⁷⁾)			ISO 18846
Temperature of pellets	°C	≤ 40 ⁸⁾			
Net Calorific Value	kWh/kg ²⁾	≥ 4,6 ⁹⁾			ISO 18125
Bulk Density	kg/m ³ ²⁾	600 ≤ BD ≤ 750			ISO 17828
Additives	w-% ²⁾	≤ 2 ¹⁰⁾			-
Nitrogen	w-% ³⁾	≤ 0,3	≤ 0,5	≤ 1,0	ISO 16948
Sulfur	w-% ³⁾	≤ 0,04	≤ 0,05		ISO 16994
Chlorine	w-% ³⁾	≤ 0,02		≤ 0,03	ISO 16994
Ash Deformation Temperature ¹⁾	°C	≥ 1200	≥ 1100		CEN/TC 15370-1
Arsenic	mg/kg ³⁾	≤ 1			ISO 16968
Cadmium	mg/kg ³⁾	≤ 0,5			ISO 16968
Chromium	mg/kg ³⁾	≤ 10			ISO 16968
Copper	mg/kg ³⁾	≤ 10			ISO 16968
Lead	mg/kg ³⁾	≤ 10			ISO 16968
Mercury	mg/kg ³⁾	≤ 0,1			ISO 16968
Nickel	mg/kg ³⁾	≤ 10			ISO 16968
Zinc	mg/kg ³⁾	≤ 100			ISO 16968

¹⁾ ash is produced at 815 °C

²⁾ as received

³⁾ dry basis

⁴⁾ a maximum of 1% of the pellets may be longer than 40mm, no pellets longer than 45mm are allowed.

⁵⁾ at the loading point of the transport unit (truck, vessel) at the production site

⁶⁾ at factory gate or when loading truck for deliveries to end-users (*Part Load Delivery* and *Full Load Delivery*)

⁷⁾ at factory gate, when filling pellet bags or sealed *Big Bags*.

⁸⁾ at the last loading point for truck deliveries to end-users (*Part Load Delivery* and *Full Load Delivery*)

⁹⁾ equal $\geq 16,5$ MJ/kg as received

¹⁰⁾ the amount of additives in production shall be limited to 1,8 w-%, the amount of post-production additives (e.g. coating oils) shall be limited to 0,2 w-% of the pellets.

¹¹⁾ As long as the mentioned ISO standards are not published, analyses shall be performed according to related CEN standards

Measured data shall be displayed with the same number of decimals as stated in this *Handbook*.

The ENplus quality classes exceed the requirements of ISO 17225-2 on the following points:

- For ENplus A1, the mechanical durability shall be $\geq 98,0$ w-%.
- For ENplus B, the mechanical durability shall be $\geq 97,5$ w-%.
- Limit for the amount of fines in bags and sealed *Big Bags* 0,5 w-% at factory gate.
- Limit for the temperature of pellets at the loading point for end-user deliveries: 40 °C.
- Mandatory requirements on ash melting behaviour.
- The ash used for the measurement of the melting behaviour is produced at 815°C.

3 REQUIREMENTS ON WOOD RAW MATERIALS

The types of wood indicated in *Table 2* can be used according to the standard ISO 17225-2 as raw material for the production of wood pellets. The raw material assortments are defined in ISO 17225-1.

Table 2: *Wood types that are permitted to be used for wood pellet production*

ENplus A1	ENplus A2	ENplus B
1.1.3 Stem wood ^{a)}	1.1.1 Whole trees without roots ^{a)}	1.1 Forest, plantation and other virgin wood ^{a)}
1.2.1 Chemically untreated by-products and residues from the wood processing industry ^{b)}	1.1.3 Stem wood ^{a)}	1.2.1 Chemically untreated by-products and residues from the wood processing industry ^{b)}
	1.1.4 Logging residues ^{a)}	
	1.2.1 Chemically untreated by-products and residues from the wood processing industry ^{b)}	1.3.1 Chemically untreated used wood ^{c)}

a) Wood which was externally treated with wood preservatives against insect attack (e.g. lineatus), is not considered as chemically treated wood. If all chemical parameters of the pellets comply with the limits and/or concentrations are too small to be concerned with.

b) Negligible levels of glue, grease and other timber production additives used in sawmills during production of timber and timber product from virgin wood are acceptable, if all chemical parameters of the pellets are clearly within the limits and/or concentrations are too small to be concerned with.

c) Demolition wood is excluded. Demolition wood is used wood coming from the demolition of buildings or civil engineering installations.

ENplus deviates from the standard ISO 17225-2; the use of demolition wood and of chemically treated wood is not allowed for any ENplus pellets.

4 REQUIREMENTS ON ADDITIVES

An additive is a material which is intentionally introduced into pellet production, or is added after production, to improve the quality of fuel, reduce its emissions, make production more efficient or mark the pellets. Additives are allowed to a maximum of 2% of the total mass of the pellets. The amount of additives in production shall be limited to 1,8 w-%, while the amount of post-production additives (e.g. coating oils) shall be limited to 0,2 w-% of the pellets. The type (material or trade name) and quantity (in w-%, as received) of all additives shall be documented. Water, steam and heat are not regarded as additives.

Additives, such as starch, corn flour, potato flour, vegetable oil, lignin from sulphate kraft process etc., shall originate from processed or unaltered farming and forestry products. The *Board of ENplus* may exclude the use of a particular additive if concerns are raised that it creates operational problems in heating devices or poses health or environmental risks. The company may file an objection against the exclusion (see *chapter 2.8 of part 2 of the ENplus Handbook*).

The type (e.g. starch, vegetable oil) or at least the brand name of the additive shall be stated in the *Inspection Report* and the *Conformity Report*.