

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.