



Specification of properties for industrial Biocoal pellets, produced from torrefied wood (mixture of deciduous and coniferous wood obtained from forest and park).

Origin: 1.1 Forest, plantation and other virgin wood (classification according EN 14961-1).

Additives and binders: w-% of pressing mass. Type and content of pressing aids, slagging inhibitors or any other additives have to be stated. The maximum allowed amount of additive is 20 w-%. If amount is greater, then raw material for pellet is blend.

Dimensions: Diameter (D mm.) and Length (L mm.). EN 16127.

D 06: D = 6 mm. \pm 1.0 mm.; 3.15 mm. \leq L \leq 40 mm.

D 08: D = 8 mm. \pm 1.0 mm.; 3.15 mm. \leq L \leq 40 mm.

D 10: D = 10 mm. \pm 1.0 mm.; 3.15 mm. \leq L \leq 40 mm.

D 12: D = 12 mm. \pm 1.0 mm.; 3.15 mm. \leq L \leq 50 mm.

Amount of pellets longer than 40 mm. (or 50 mm.) can be 5 w-%. Maximum length for classes D06, D08 and D10 shall be < 45 mm.

Moisture content: M w-% as received. EN 14774-1; EN 14774-2.

M 05: M \leq 5 %

M 10: M \leq 10 %

M 15: M \leq 15 %

M 15+: M > 15 % (max. value to be stated).

Ash content: A w-% of dry basis. EN 14775.

A 1.0: A \leq 1.0 %

A 2.0: A \leq 2.0 %

A 3.0: A \leq 3.0 %

A 4.0: A \leq 4.0 %

A 5.0: A \leq 5.0 %

A 7.0: A \leq 7.0 %

A 10.0: A \leq 10.0 %

A 10.0+: A > 10.0 % (max. value to be stated).

Mechanical Durability: DU w-% pellets after testing. EN 15210-1.

DU 98.5: DU \geq 98.5 %

DU 97.5: DU \geq 97.5 %

DU 96.5: DU \geq 96.5 %

DU 95.0: DU \geq 95.0 %

DU 95.0-: DU < 95.0 % (min. value to be stated).



Amount of Fines: F w-% < 3.15 mm after loaded or packed. EN 15149-1.

F 1.0: F ≤ 1.0 %

F 2.0: F ≤ 2.0 %

F 3.0: F ≤ 3.0 %

F 5.0: F ≤ 5.0 %

F 5.0+: F > 5.0 % (max. value to be stated).

Bulk density: BD kg/m³ as received. EN 15103.

BD 550: BD ≥ 550 kg/m³

BD 600: BD ≥ 600 kg/m³

BD 650: BD ≥ 650 kg/m³

BD 700: BD ≥ 700 kg/m³

BD 750: BD ≥ 750 kg/m³

BD 750+: BD > 750 kg/m³ (min. value to be stated).

Net Calorific Value: LHV MJ/kg dry and ash free basis. EN 14918.

LHV 20: LHV ≥ 20 MJ/kg

LHV 22: LHV ≥ 20 MJ/kg

LHV 24: LHV ≥ 24 MJ/kg

LHV 26: LHV ≥ 26 MJ/kg

LHV 26+: LHV > 26 MJ/kg (min. value to be stated).

Fixed Carbon: FC w-% of dry and ash free basis. EN 15148.

FC 30: FC ≥ 30 %

FC 40: FC ≥ 40 %

FC 55: FC ≥ 55 %

FC 70: FC ≥ 70 %

FC 70+: FC > 70 % (min. value to be stated).

Hard Groove Grindability Index: HGI value. ISO 5074.

HGI 30: HGI ≥ 30

HGI 40: HGI ≥ 40

HGI 50: HGI ≥ 50

HGI 60: HGI ≥ 60

HGI 70: HGI ≥ 70

HGI 70+: HGI > 70 (min. value to be stated).

Hydrophobic behaviour in open air (high humidity) and **swelling behaviour in water** (wettability): measuring method and properties still to be defined.



Sulphur content: S w-% of dry basis. EN 15289.

- S 0.02:** $S \leq 0.02 \%$
- S 0.05:** $S \leq 0.05 \%$
- S 0.08:** $S \leq 0.08 \%$
- S 0.10:** $S \leq 0.10 \%$
- S 0.20:** $S \leq 0.20 \%$
- S 0.20+:** $S > 0.20 \%$ (max. value to be stated).

Nitrogen content: N w-% of dry basis. EN 15104.

- N 0.3:** $N \leq 0.3 \%$
- N 0.5:** $N \leq 0.5 \%$
- N 1.0:** $N \leq 1.0 \%$
- N 2.0:** $N \leq 2.0 \%$
- N 3.0:** $N \leq 3.0 \%$
- N 3.0+:** $N > 3.0 \%$ (max. value to be stated).

Chlorine content: Cl w-% of dry basis. EN 15289.

- Cl 0.02:** $Cl \leq 0.02 \%$
- Cl 0.03:** $Cl \leq 0.03 \%$
- Cl 0.07:** $Cl \leq 0.07 \%$
- Cl 0.10:** $Cl \leq 0.10 \%$
- Cl 0.10+:** $Cl > 0.10 \%$ (max. value to be stated).

Typical values trace elements: mg/kg of dry basis. EN 15297

- As:** < 3.0 mg/kg
- Cd:** < 3.0 mg/kg
- Cr:** < 15 mg/kg
- Cu:** < 25 mg/kg
- Hg:** < 0.10 mg/kg
- Ni:** < 10 mg/kg
- Pb:** < 20 mg/kg
- Zn:** < 250 mg/kg

Ash Melting behaviour: FT (Fluid Temperature °C in an oxidizing atmosphere). EN 15370-1.

- FT 1200:** $FT \geq 1200 \text{ °C}$
- FT 1300:** $FT \geq 1300 \text{ °C}$
- FT 1400:** $FT \geq 1400 \text{ °C}$
- FT 1400+:** $FT > 1400 \text{ °C}$ (min. value to be stated).