



CENER

NATIONAL RENEWABLE
ENERGY CENTRE

ADIttech

Cleaned straw pellet characterization

Low potassium content.
Very low chlorine content.
Low sulphur content
Low inorganic aerosols release. Nofouling and very low particle emissions.
High ash melting temperature. No slaging.
High net calorific value. High flame temperature.
High HGI. Easily milled with very fine particle size. Suitable for pulverized combustion
High bulk density



Analysis Description			Standard Method
Proximate Analysis			
Total moisture (% a.r.b.)	7,1	8,6	UNE EN ISO 18134-2:2015
Ash (% d.b.) (1)	6,0	8,0	UNE EN ISO18122:2016.
Volatile matter (% db.)	67,0	71,0	UNE EN ISO 18123:2016
CV Net MJ/kg db	19,0	21,5	UNE-EN 14918:2011
Ultimate Analysis (1)			
Chlorine (% d.b.)	0,005	0,008	UNE-EN- ISO 16994:2015
Sulphur (% d.b.)	0,040	0,059	UNE-EN- ISO 16994:2015
Nitrogen (% d.a.f.)	0,30	0,80	UNE-EN- ISO 16948:2015
Trace Metals - Major Elements (1)			
Aluminium (mg/kg d.b.)	154	459	UNE-EN- ISO 16967:2015
Calcium (mg/kg d.b.)	5.220	7.480	UNE-EN- ISO 16967:2016
Iron (mg/kg d.b.)	246	658	UNE-EN- ISO 16967:2017
Magnesium (mg/kg d.b.)	829	1.210	UNE-EN- ISO 16967:2018
Phosphorous (mg/kg d.b.)	349	554	UNE-EN- ISO 16967:2019
Potassium (mg/kg d.b.)	2.310	3.820	UNE-EN- ISO 16967:2020
Silicon (mg/kg d.b.)	13.200	14.800	
Sodium (mg/kg d.b.)	20	420	
Titanium (mg/kg d.b.)	9	35	
Ash Fusion (1)			
Shrinkage °C	830	1.100	CEN/TS 15370-1:2006
Deformation °C	1.230	1.270	
Hemisphere °C	1.250	1.270	
Flow °C	1.260	1.280	
Physical Properties			
Tamped Bulk Density (kg/m ³)	700	730	UNE-EN ISO 17828:2016
Pellet Diameter mm	6	6	
Fines Content through 3.15mm round hold sieve (%)	0,02	0,16	UNE-EN ISO 17827-2:2016
Mechanical Durability	96,2	98,2	UNE-EN ISO 17831-1:2016
Hardgrove Grindability Index (HGI)	29	49	ISO 5074

(1) Dependent on raw material composition