

BIOFUEL: WOOD CHIPS

During the past years the use of solid biofuels for thermal use has increased, both in the domestic and industrial sectors.

This consume increase has caused a rising on the prices of petroleum-based fuels, and environmental concern for the gas emission has grown, specially since the Kyoto protocol.

Biofuels are those fuels derived from biomass, in other words, alive beings, their structures of their products. The biomass used with energetic aims is called biofuel.

composition

Vegetal biomass contains mostly carbon hydrates, mainly in lignocelluloses or starchy complexes, being the rest fats and nitrogenised organic complexes (such as proteins).

Wood chips belongs to the primary solid biofuel group, made out of lignocelluloses from forestall and industrial origin. This kind of biofuels has a low sulphide content, so their heat power is defined by the carbon and hydrogen content, as well as their moisture.

Taken a dry sample, the higher the lignine content the higher the heat power.

The wood chips composition is detailed in the table below.

composition	%	% carbon	P.C.S. (Kcal/Kg)
Cellulose	40-50	45	4.100
Hemicellulose	15-25	40	4.100
Lignine	25-35	70	6.370

(Hydrogen content in all fractions is around 6%)

properties

Wooden vegetal used with energetic aims are classified into conifers and lush, being their structure very different.

Resinous woods, mostly conifers, contain resinous acids, which increase the wood's burning capacity and its heat power. On top of that, conifer wood has a higher lignine percentage, which also contributes to an increase of the heat power.

BURÉS PROFESIONAL, S.A., sells solid biofuels from pine chips of the following species:

SPECIES	%	DENSITY (Kg/l)
<i>Pinus nigra</i>	39	0.62
<i>Pinus Sylvsetris</i>	46	0.55
<i>Pinus uncinata</i>	6.5	0.07
<i>Pinus pinaster/radiata</i>	1.5	0.08-0.10
<i>Other (Picea, Abies...)</i>	7	-

The material is chipped and sieved to adapt it to the different kinds of domestic and industrial ovens.

Some heat powers of used pine species are shown in the table below.

SPECIES	Heat Power (KJ/Kg)
<i>Pinus nigra</i>	15.479
<i>Pinus Sylvsetris</i>	16.652
<i>Pinus pinea</i>	15.708
<i>Pinus pinaster</i>	15.721
<i>Pinus radiata</i>	14.729



recommended uses

Biomass can have multiple applications of heat producing and refrigeration, with way less technical limitations than other combustion installations. Some of them are the following:

- Heat nets and ACS in houses and public places
- Agricultural and industrial dryers
- Farms' heating
- Wine cellars
- Greenhouses