

# Degumming Prosopis Wood And Briquetting it with Rice Husk

LALIT A. PATEL

This paper presents a method of making prosopis wood rice husk white coal. Such a white coal offers advantages like gum utilization, good holding strength, tolerable ash content desirable combustion characteristics etc.

**W**ITH FOSSIL FUELS FAST DEPLETING, coal substitutes are attracting everyone's attention. One such substitute is the so-called "White Coal", which is obtained by briquetting agro waste directly in a high tonnage press. The white coal production technique is based on a simple principle. When an agro waste particle is pressed, cellulose contained inside the particle comes out. When an agglomeration of agro waste particles is pressed, cellulose contained inside the particles comes out and forms an adhesive network inside which the particles get entrapped, thereby forming a briquette.

As is well-known prosopis wood is pyrolysed and converted into pyrolysis charcoal (without any artificial briquetting), and this charcoal is then used as a fuel. It is not necessary to convert prosopis wood into white coal for using it as a fuel.

Rice husk white coal poses several problems. An undesirably high silica content and an undesirably low adhesive extractability of rice husk makes it too difficult to produce white coal.

The combustion of rice husk white coal at higher temperatures may lead to slag formation, thereby making it difficult to exploit the heating value of rice husk white coal.

## Supposition

This paper describes a supposition that prosopis wood together with rice husk can be briquetted to form a good-quality white coal.

A prosopis wood chip is mixed with rice husk. The wood chip dimensions may vary from 20 mm minimum to 50 mm maximum. The rice husk volume may be approximately equal to the wood chip volume. The mixing should be such that the wood chip is almost evenly covered with rice husk. The moisture content of neither wood chip nor rice husk should exceed 15 percent.

The above mixture is pressed under a screw press, hydraulic press, or a similar other press. The capacity of the press selected should be high enough to yield an overall compaction of the order of 1/5. The pressing action should last for such a duration that hysteresis effects are negligible (i.e. swallowing of the resultant product is negligible). The pressure applied on the mixture is transmitted to the wood chip. As the wood chip undergoes pressure, gum contained inside the wood chip comes out. The gum so extracted spreads inside the rice

husk layer surrounding the wood chip.

The resultant product is a pellet, in which prosopis wood forms a core and rice husk forms an outside layer. The pellet volume is approximately 1/4 of the initial volume of the input material.

## Advantages:

The pellet described above (i.e. prosopis wood rice husk white coal) has the following advantages:

– The gum contained inside prosopis wood is made use of.

– On account of a hard core, this pellet has a higher holding strength than a pellet made from rice husk alone.

– The overall ash content of this pellet is less than that of a pellet made from rice husk alone.

– This pellet can have a better breathing action, and hence better combustion characteristics than pellets of other types.

## Options:

There are several modifications/options possible in the supposition described above:

– Instead of prosopis wood, some other wood can be used.

– Instead of rice husk, some other agro waste properly pyrolysed and powdered can be used.

– The process of producing pellets can be made a continuous process by introducing appropriate feed and transmission arrangements.

– Sizes of wood chips and rice husk bulks can be varied as per availability and requirement. □

## References:

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## THE AUTHOR

Lalit A. Patel is with Gujarat Agro Industries Corporation Ltd Ahmedabad-380 025.