

# **Briquettes Making from Solid Waste: A Review**

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**ABSTRACT:** The Energy demand is increasing day by day as the number of industries is increasing proportionately and the recent power supply is not suitable to meet the energy demand. To combat this energy shortage and scarcity developed as well as developing countries are establishing more attempt into R&D to tap alternative energy sources. State policies are also being developing to encourage alternative sources of energy. In India it is proposed that 17,000 MW should be generated from biomass. Although other alternative options like gasification, incineration can be used for power production, briquetting of biomass can be considered for its economics, reliability and simple of operation. Briquettes of small size can be utilized in gasifiers for power generation and generation. If the plant location is selected properly for easy accessible of raw material, the agro-residues can be briquetted to reduce further transportation costs and associated pollution. This also upgrade the handling characteristics and properties of biomass. The briquettes so obtained are satisfying fuels for local small-scale industries and domestic purposes.

**KEYWORDS:** Briquettes, Calorific value, Biofuel.

## **I. INTRODUCTION**

According to the international ISO 17225 STANDARD, solid biofuels, fuel specifications and classes, a briquette is a “densified biofuel produced with or without additives, having a cubic, prismatic or cylindrical shape, with a 25 mm diameter, produced from woody biomass compression or crushed herb. “Briquetted fuel is produced from biomass such as agro-waste and other organic matters. This is produced by compaction of biomass after extracting moisture. This process increases the calorific value of the fuel. In India, large quantity of biomass is available in rural areas and there is huge potential as fuel is required for daily cooking, for industrial purpose and for hotels & restaurants. Variety of raw materials can be utilized depending on the availability and price. However, preferred raw materials will be sugarcane bagasse, cotton stalk, wood dust, groundnut, husk, corn cobs, Rice husk, Paddy and Cotton cloth for making briquette, the production will be carried without using any briquettes machine. Rice husk as an abundant waste of biomass up to 21 million tons/year, it is unfortunate if it is not utilized. By converting it into bio briquettes, the value of rice husk bio briquettes in some studies before obtaining a relatively low value of 3,221-3,350 cal/g. The purpose and reason of this research is to increase and rise the calorific value of rice husk bio briquettes by mixing with coconut shell charcoal or corncob charcoal, Maida as the binders at composition ratio of 60:40, to reach the optimum value that the industrial sector needed. The main ingredients of biomass are several of chemicals (molecules), most of which contain carbon atoms (C). When the biomass is burned, the carbon will be released into the air in the form of Carbon Dioxide (CO<sub>2</sub>).

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## II. SOLID WASTE MANAGEMENT

Solid waste management is a term that is used to refer to the process of collecting and treating solid wastes. It also offers solutions for recycling items that do not belong to garbage or trash. If people have been living in settlements and residential areas, garbage or solid waste has been an issue. Waste management is all about how solid waste can be changed and converted, used as a valuable resource. Solid waste management should be embraced by each household including the business owners across the world. Industrialization has brought a lot of good things and bad things as well. One of the negative effects of industrialization is the creation and creation of solid waste.

Md abdulmomin aimed to evaluate that briquette which were produced from the mixing ratio of 20:80 has good calorific value, compressive strength and slower burning rate which concluded that it is more suitable for briquetting [1]. Tasnimoham came to results the briquette performance was compared to firewood through water boiling test which showed that 1 kg of the briquette took 15 minutes to boil 2 litres of water where as it took 1.2 kg of firewood 21minutes to boil the same quantity of water. The values of volatile matter and ash content are good and acceptable. [2] Md. Ahiduzzaman et.al use rice husk briquette would reduce deforestation process and develop a carbon stock towards a sustainable growth of forest resources. Sriram et.al. evaluated that the calorific value of the briquette obtained from cotton waste increased with the help of fillers and binders [3]. S Suryaningsih et.al the research showed that the participation of coconut shell material or corn cob on rice husk base material can increase the value of rice husk briquette significantly [4]. Muntean et.al. the research results showed that pellets and briquettes from cotton waste biomass (PHT) fully matches up to quality requirements for pellets and briquettes which showed that PHT-based solid biofuels (both pellets and briquettes) showed very good quality [5]. Aishwariya et.al. helped to reduce the dependence on woods for textile wet processing, willow waste briquettes can be a good alternative to wood and coal [6]. DR. PUSHPA JHA et.al suggested that good quality briquettes of Saw Dust can be produced by controlling a number of processes. The power consumption can be decreased by increasing the percentage of binder in the feed[7]. ThlammaMaryah Umar concluded from the study that good quality and highly storable/durable briquettes can be produced from sawdust the energy or heat produced by the briquettes is equal to that of fuel wood and kerosene, hence it can be used in place of fuel wood and kerosene [8]. Eduardo A. Sánchez\* et.al. concluded that sawdust briquette has positive results compared to the bio-fuel materials currently used, with a higher bulk density, similar levels of calorific power, less moisture, and low levels of fixed carbon, chlorine and sulphur [9]. Daham Shyamalee concluded that briquettes with paper binder exhibited comparatively high compressive strength compared to wheat flour binder. Calorific value of briquettes obtained with 30% paper binder was 18.14 MJ/kg and with 30% wheat flour binder it was 20.04 MJ/kg [10]. Mitun Chandra Bhounick, This investigation studied the optimum proportion of waste plastics to be added with biomass for a good quality of briquettes. It is found that 10 percent addition offers a good array of property improvement. Moreover this study demonstrates the feasibility of plastic incorporation with Biomass. Therefore waste plastics are converted into resources [11]. Aries Roda D. Romallosa study show that the integration of the informal sector in the production of biomass briquettes obtained from the municipal waste stream has led to a feasible on-site fuel production line after determining its usability, quality and applicability to the would-be users, which are comprised of the informal sector found near Iloilo City's controlled disposal facility [12].

## III. CONCLUSION

The research showed that organic waste like saw dust, rice husk, paper waste, cotton waste, coffee husk etc. can be used for generating briquettes. Briquettes can replace fuel like kerosene, Diesel, Furnace oil, Lignite, Coal, Firewood. Briquettes are cheap, renewable, easy to transport, more efficient, have a higher practical thermal calorific value, have much lower ash content, gives much higher boiler efficiency. The briquettes will result in cleaner environment, prevents deforestation and conservation of natural resources. By generating briquettes from the combination of different organic waste can increase the efficiency and calorific value.

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