

عنوان مقاله:

Preparation and Characterization of Fuel Pellets from Corn Cob and Wheat Dust with Binder

محل انتشار:

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خلاصه مقاله:

This study concentrates on pelletization of powdered corn cob and wheat dust with 40% Epoxy binder. Two cylindrical pellets of different sizes and a new hexagonal one were investigated in this work. By densification process, the bulk density increased 8-10 times, having its maximum value for a hexagonal shape (new shape). It was found that the compressive resistance, the water resistance and the impact resistance of the pellets were in general higher for pellets produced at higher pressure. It was found that due to the binder and pelletization, the fuel quality was enhanced compared to the raw biomass as: the moisture content decreased, both fixed carbon and carbon contents increased, ash content reduced, oxygen content decreased and higher heating value (H.H.V) increased. Scanning Electron Microscopy was used to identify the binding mechanism of biomass dust particles in pellets. Pelletization process had improved combustion characteristics compared to raw biomass as: high combustion temperature ranges [T_{onset} becomes lower and T_{offset} becomes higher], maximum weight loss rates decreased and reduced residues which leads to a higher combustion efficiency. The analysis of ash yields of combustion process was investigated. It was found that the fouling index (FI) and slagging index (SI) tendency of wheat dust pellets are higher than that of corn cob pellets

کلمات کلیدی:

,Corn Cob,Wheat Dust,Pellets,Mechanical Properties,Combustion Characteristics

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