



Binderless, Easy Lighting Charcoal Briquettes

A method to make moisture-resistant biofuel briquettes with high aroma retention, high volatility, and low ash content.

Engineered charcoal briquettes with superior qualities

This technology is a new method to cost effectively make biofuel briquettes/pellets from torrefied woody biomass using less than 5% binding material. Charcoal briquettes/pellets made using this technology are highly moisture resistant and these briquettes/pellets do not disintegrate or turn mushy when exposed to water. Flavoring ingredients can be added *after* briquetting or pelleting, thereby increasing retention of a variety of artificial flavors. Moisture resistance also enables easy transportation and outdoor storage. In addition, this engineered charcoal has lower ash content (< 5%) and ~65% volatile content, compared to over 23% ash and about 35% volatile content of conventional charcoal.

Improved flavoring and heat generation with lowered binding material

In the conventional approach to making biofuel pellets, flavoring agents are added prior to the pelleting step but flavoring is often lost due to process heat. Researchers at the University of Minnesota have developed an improved charcoal briquettes/pellets to which flavors can be added both before and after the pelleting step. This technique, which applies a combination of drying, torrefaction, grinding, and densification procedures, uses less than 5% of binding agent. The briquettes/pellets made using this technique offers significantly higher heating value to the briquette along with greater yield than conventional techniques. Typical woods such as red oak, maple, other hardwood or softwood species can be used, and application of a variety of flavoring ingredients such as liquid smoke, citrus, orange, lemon, paprika, oregano, etc. is possible.

Phase of Development

- Pilot scale demonstration.

Benefits & Features

- Moisture resistant briquettes for improved flavoring and outdoor storage; up to 30% water uptake without disintegration
- Innovative post-pelleting addition of liquid flavor; large variety of flavors can be added effectively, including concocted or sequential flavoring.
- Significantly lower binder content reduces cost of manufacturing
- Faster lighting and lower ash content enables quicker fire startup and easier grill cleanup
- Manufacturing process can be scaled up for industrial production on existing briquetting and pelletizing equipment
- Survives aggressive shovel handling making loading large charcoal fires cleaner and less dusty

Applications

Technology ID

20180156

Category

Engineering & Physical
Sciences/Materials

Learn more



- Industrial and barbecue charcoal
- Flavored charcoal grilling
- Metallurgical applications to replace coal
- Blacksmithing applications to replace coal
- Camping, including at beaches

Researchers

Tim Hagen, PhD

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[External Link](http://www.nrri.umn.edu) (www.nrri.umn.edu)

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