



Corn Stover Agglomerates for Oil Absorption

IP Status: Issued US Patent; **Application #:** 13/214,761

Lightweight, Biodegradable Alternative to Clay-Based Sorbents

A lightweight, biodegradable oil absorbent material created from corn stover shows desirable oil sorbency characteristics, making it an effective alternative to clay-based sorbents. Dust-free corn stover agglomerates are produced by a gentle agglomeration and rolling action using a novel, two part bonding system that forms a web onto which additional particles adhere and roll upon. The web is formed as a result of crosslinking of liquid and solid portions of binding system. The cellular structure of the corn stover is conserved: particles remain intact in an undensified, "non-collapsed" state, allowing oil and other hydrocarbon fluids to wick into its porous structure. The ground corn stover is gently agglomerated into 4 to 8 mm beads with a very high open porosity, creating pore surfaces and pore volume for oil and other liquids to be captured.

Better Sorbency, Significantly Less Ash, and More Recoverable Energy

Conventional technology, such as compression pelleting, uses high compression dies where material is forced under friction through a die cavity. This new process uses gentle growth agglomeration, where properly prepared feed is self-agglomerated in a balling drum, disc or tire with significant emphasis on minimal densification, assuring the delicate corn stover fibers are attached to one another with pendular bridging. Overall, the process creates agglomerate sooner, at lower moisture and with superior green strength compared to single stage binders. Compared to conventional clay based absorbents, agglomerated corn stover fiber has over 5 times more sorbency, significantly less ash, and provides more recoverable energy.

BENEFITS AND FEATURES:

- Lightweight, biodegradable oil absorbent material from corn stover
- Alternative to clay-based sorbents
- Agglomerated corn stover fiber has over 5 times more sorbency, significantly less ash, and provides more recoverable energy than conventional clay based absorbents
- Process creates agglomerate sooner, at lower moisture and with superior green strength compared to single stage binders
- Gentle agglomeration and rolling action using two part bonding system
- Conserves cellular structure: particles remain intact in an undensified, "non-collapsed" state, allowing oil and other hydrocarbon fluids to wick into its porous structure
- Very high open porosity
- Simple process uses commonly available agricultural equipment

APPLICATIONS:

- Oil Absorbent
- Alternative to clay-based sorbents
- Animal and pet bedding
- Renewable materials
- Engineered carrier for biological fertilizers

Phase of Development - Pilot scale demonstration

Technology ID

z09111

Category

Engineering & Physical
Sciences/Materials
Engineering & Physical
Sciences/Sustainable Technology
Agriculture & Veterinary/Ag
Biotechnology

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