



Coal Gob Research Project



Presented By

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—
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About us

Introduction to our team

Vision: Create a sustainable future with disruptive innovations and converting waste into eco economical and social innovations.

Eureka EcoInnovations LLC is a sustainability-focused company in the USA that specializes in innovative solutions for industrial and commercial waste. Our primary goal is to develop sustainable methods for dealing with waste and to create materials such as bricks, blocks, precast panels, and tiles from it. The entire process is designed to be carbon negative and based on the triple bottom line circular model of sustainability.

In addition to our waste reduction efforts, we are also committed to empowering those in need through skills training. We aim to teach them how to make these construction materials, home decor and gifting products. These materials will not only serve as a source of employment but will also be used to construct tiny homes for empowering the community.

Services :

- New Sustainable Product Development
- Waste Research and Solutions
- Eco Consultations
- Interiors
- Eco Housing
- Home decor and gifting
- Eco Flooring



Our Team

- Binish Desai- CEO and Innovations
- Yashvi Desai- Design and Quality control
- Justin Roberts- Operations and Corporate outreach
- April Roberts- Research and Administration
- Brent Jones- Finance and Administration
- Leslie Jones- Marketing and Administration

Coal GOB

An Overview

Bituminous coal mining generates waste known as Garbage of Bituminous (GOB), which contains iron, manganese, and aluminium and causes acid drainage, sediment release, and coal fines that can harm waterways. Additionally, GOB piles emit greenhouse gases, including carbon dioxide and methane, as well as toxic substances such as carbon monoxide and mercury. Coal dump sites produce between 1200 to 8200 kilograms CO₂/m² per year, and abandoned coal mines and coal mining account for 7-8% of total US methane emissions in 2019.

The Galatia Mine, located approximately 10 miles northwest of Harrisburg, Illinois, is the largest underground coal mine in Illinois and produces mid-sulphur and high sulphur bituminous coal. As of April 2022, the mine has closed down and is now known as Illinois Land Resources. The closure has had a significant impact on the Galatia School District, which has lost property taxes and is struggling financially.



The Galatia coal mine dump is spread over approximately 800 acres and is 500 feet tall, covering an area of approximately 34,848,000 square feet. The dump poses environmental concerns for surrounding areas, and local residents have been seeking a solution to this problem. The shutdown of mines in Southern Illinois, including Galatia, has resulted in significant economic burden for counties and small towns, such as Harrisburg.

Solution

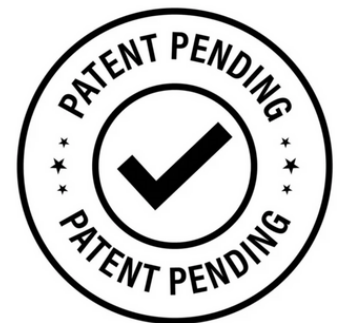
Utilization of GOB

Eureka EcoInnovations LLC has invested a significant amount of time and resources into researching the issue of the growing pile of garbage on the planet. With the assistance of Dr. Binish Desai's research, they have successfully created a material that can help transform the GOB pile into construction materials. A patent application has been filed with the US Patent and Trademark Office (USPTO) for this innovative prototype material and process. They are currently in the process of commercializing the material to not only reduce the GOB pile but also generate local employment.

The company has also made use of ARsoy, a by-product of the food-grade soy isolate production, in the development of their material. The industrial-grade soy protein/fiber is produced in Decatur, Illinois, and is primarily shipped via railcar to various destinations by ADM. Although most of the annual production is used for animal feed, the product has less variability than standard soybeans and offers another application for ADM's byproduct.

Furthermore, the research has shown that the entire process will result in carbon-negative products. The entire process, from beginning to end product, ensures maximum utilization of the material, resulting in a zero-waste process

We are excited to announce that a patent has been filed on our material and has a patent pending status with USPTO.



Applications

Potentials of the product invented.

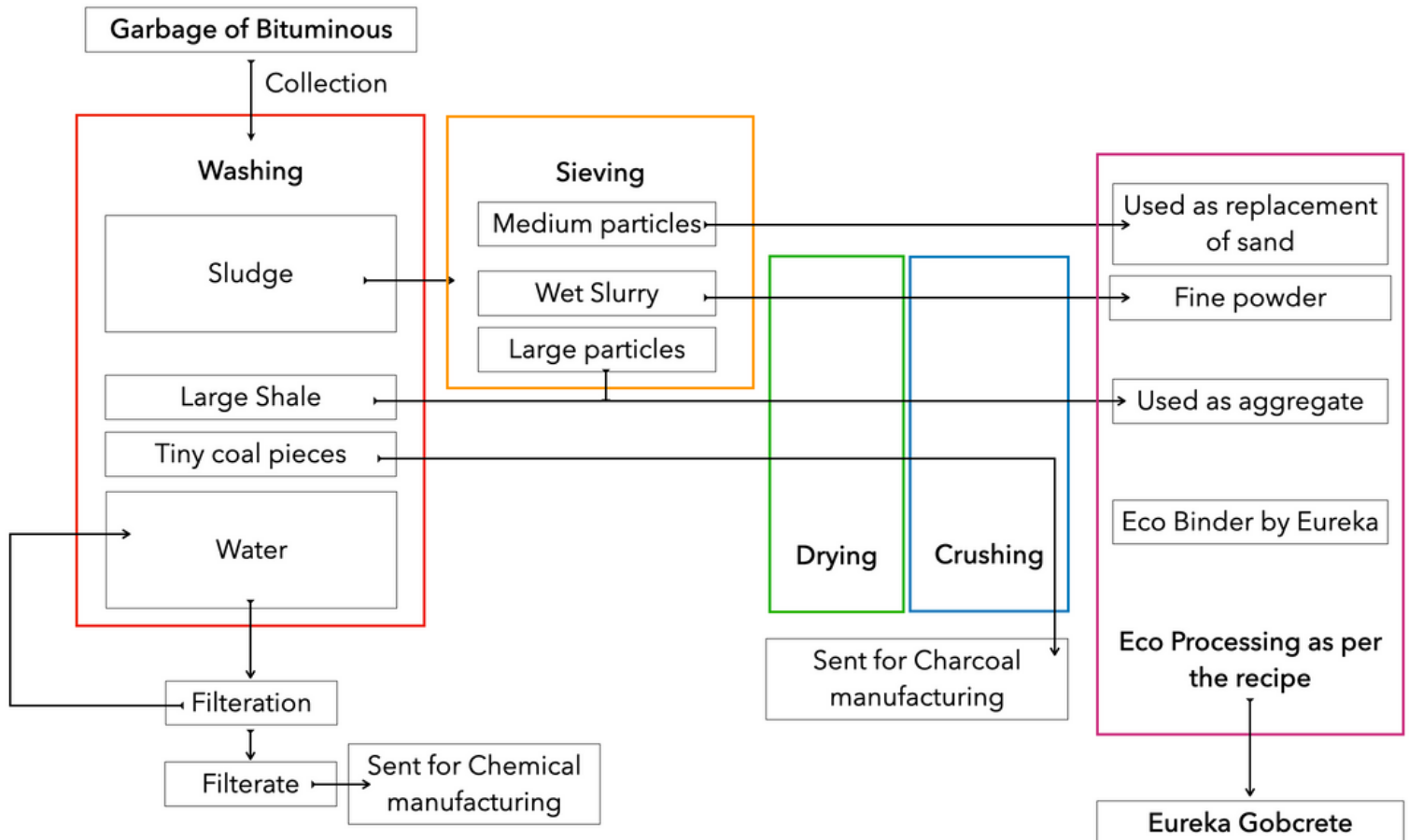
- Bricks and Blocks
- Premix
- Precast products
- Industrial flooring
- Retaining walls
- 3D printed homes
- Paving , sidewalks, driveways and parking lots
- Countertops and decorative panels
- Other future applications in military, aerospace, agriculture etc.

The possibilities of this material are endless with a new substitute of concrete.

Process

Converting GoB into Gobcrete

The process of recycling of GOB and its conversion into Gobcrete is in 4 stages :

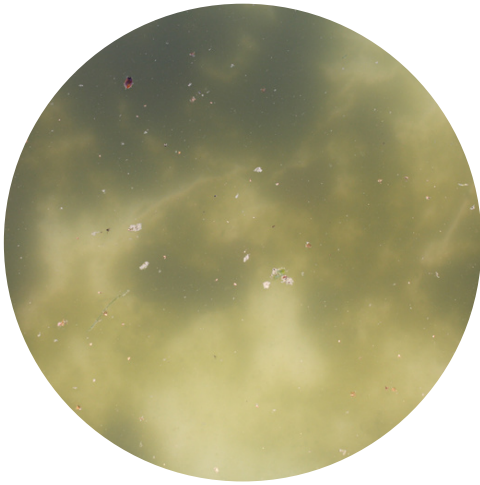


The entire process is carbon negative and zero discharge. The electricity used will be from a renewable source. Post collection, the material goes through the following steps:

- **Washing:** The material is thoroughly washed and churned. The process divides it into sludge, large shale, tiny coal pieces, and grey water. The grey water is filtered and reused back into this process.
- **Sieving:** The sludge goes through an additional process where it is separated into medium particles which are directly used as a replacement of sand in Gobcrete, large particles, and wet slurry.
- **Drying and Crushing:** All the particles including sieved large particles mixed to large shale and wet slurry are dried and crushed. The washed and separated tiny coal pieces are dried, crushed, and given for charcoal manufacturing.
- **Eco Processing:** All the ingredients extracted are mixed together along with our eco binder to create a mixture which after drying becomes Eureka Gobcrete.

Materials

Photographic representation of the material.



Grey Water

Used water with that can be reused after filtration.



Powdered Slurry

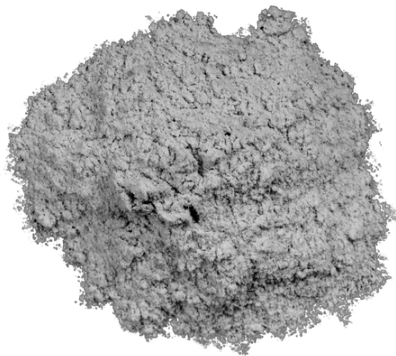
Slurry from the serving process is dried and powdered



Shale

Obtained from the serving process in stage 2 . Particles are between 0-12mm

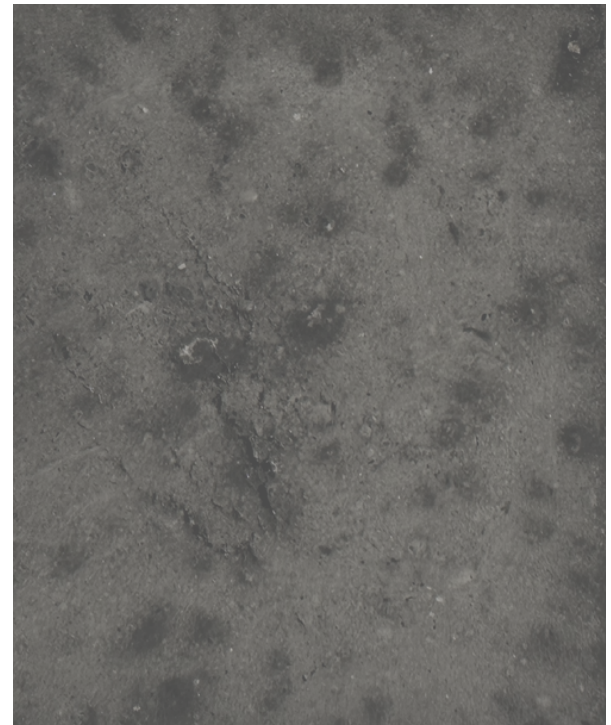
Binder



Specially formulated material developed by Dr Binish Desai at Eureka Ecoinnovations that is a trade secret. It consists of eco friendly natural ingredients. Patent pending tech with USPTO

ARSoy & Soy meal

byproduct from ADM soymeal processing plant. Used as an additive in the process.



Gobcrete

Composite material made from Coal waste

Features

Properties and Features of the product

- Environment friendly and 100% Recyclable
- Carbon Negative
- Strong and Durable
- Reduction in Mortar consumption
- Energy efficient
- Fire retardant and Pest Resistant
- Accurate dimensions and perfect surface for plastering.
- Natural Thermal Insulation and suitable for all weathers



Properties of product : (in-house testing)

- Compressive strength : 40 - 120 kg/cm²
- Grade strength: M40-M45
- Water Absorption : 10 - 15 %
- Density : 450 - 800 kg/m³

Commitments

Eureka's commitment to UNSD goals



Project status

Current stage of the project

Our product has reached the prototype stage that is commercially viable. We have invested our own personal funds into this research and patent without any external grant or support. The materials have been successfully tested in-house, and we are now seeking funding support to proceed with further commercialization and testing of the material.

Next steps

Requirements for the next steps

- **Research Funding for Product Development:**

We are seeking funding support for further research and development of our eco-friendly product. The objective is to enhance the commercial viability of the product while maintaining its environmentally-friendly characteristics and creating a pilot scale plant. With this funding, we aim to explore new techniques and materials to improve the product's manufacturing effectiveness and production of a large scale.

- **Assistance in Manufacturing Facility and Machineries:**

To manufacture our eco-friendly product on a larger scale, we require assistance with the manufacturing facility and the necessary machinery. With the right infrastructure in place, we will be able to meet the increasing demand for our product while maintaining the highest level of quality and efficiency. Therefore, we are seeking support from interested supporters who share our vision for a greener future.

- **Testing and Certification Support:**

We are committed to ensuring that our eco-friendly product meets the highest standards of quality and safety. As such, we require testing and certification support to verify that the product conforms to all relevant industry standards and regulations.

Other Projects

Brands, Products and Projects undertaken by Eureka



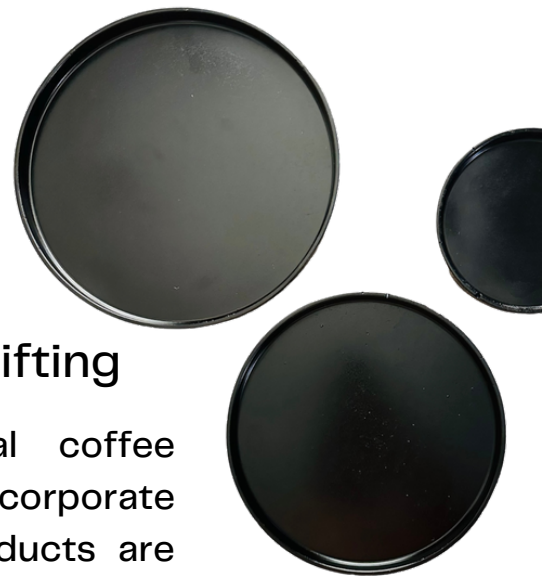
Eco Hardwood

Made from soybean and hemp this invented product helps create a unique option for flooring and cabinet applications.



Home decor & Gifting

Handmade using local coffee waste crockeries, corporate gifting and unique products are made with a social purpose.



Countertops

A unique first of its kind countertop made entirely from waste and handmade using local coffee waste from cafe.