

Composite Material and Methods for Controlling Acid Rock Drainage

ID# 3250



Acid Rock Drainage (ARD)

Technology Summary

The invention offers a practical means for controlling pollution from the reaction of water and oxygen with carbonate-free pyritic rocks (ARD). It can be applied as a powder or slurry depending on local water supplies. This invention buffers acidity to near neutrality, without producing caustic water like competing lime treatments. It also absorbs pollutants like arsenic and trace metals during treatment of runoff. Its environmentally safe composition and adjusted rheological properties regulate treatment penetration into rock and soil masses. Controlling viscosity allows for specific application on slopes up to 40 degrees or on piles of broken rock.

Application & Market Utility

Excavation into pyritic, carbonate-free bedrock or soils is often necessary during the construction of highways, large foundations, or mining of coal and/or metal ores. The exposure of pyrite to oxygen and water generates acid, causing pollution and harm to the environment. The natural process that produces ARD is spontaneous with reactions of pyrite with both water and oxygen or other oxidants. Annual acid released from US mines is about 2.7 million metric tons. ARD has polluted over 12,000 miles of rivers and streams. Approximately sixty (60) Superfund sites are abandoned mines.

Next Steps

The technology offers favorable cost/benefits over competing commodity treatments. Seeking Licensing.

TECHNOLOGY READINESS LEVEL

6-7

Seeking

Licensing |

Keywords

- Environmental Remediation
- Treatment of Acid Rock Drainage (ARD)
- Construction Site Passivation
- Mining waste beneficiation

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