

# Functional Ceramic Materials of Waste Incense Ash for Acid Rain Neutralization and CO<sub>2</sub> Fixation

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Disposing of waste incense ash poses environmental challenges due to its hazardous nature. Qualitative analysis has shown that it contains 47.74% CaO, an alkaline substance. This study explores using incense ash in creating roof tiles and bricks for acid rain neutralization and CO<sub>2</sub> fixation. Experiments over one year revealed that the efficiency of acid rain neutralization is linked to the incense ash content. Roof tiles with 5% to 20% incense ash remain effective in neutralizing acid rain even after a year. For combined acid rain neutralization and CO<sub>2</sub> fixation, a 10% to 20% ash proportion is optimal. Exceeding 20% may impact product viscosity. Incense ash products offer cost-effectiveness, durability, and efficient neutralization, making them a promising option for construction materials. In brick production, incense ash granules are encased in cement for rapid 3D printing of bricks with CO<sub>2</sub> fixation and acid rain neutralization properties.

**Awards Won:**

