Functional Ceramic Materials of Waste Incense Ash for Acid Rain Neutralization and CO2 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 CO2 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 CO2 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 CO2 fixation and acid rain neutralization properties.

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