

SEM, XRD and FTIR Analysis of Fly Ash Polymer Composite and Investigate the Micro Structural Changes, Physical, Mechanical, Thermal Conductivity and Wear Behavior at Different Proportions

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Abstract: Industrial waste such as fly ash poses environmental problems, yet it is utilized as an inexpensive and readily available construction material. However, these bricks have low strength. Thus, extensive research aims to increase the strength of these bricks. The current study develops a new systematic procedure to produce fly ash composite bricks with higher compressive strength. Here, fly ash is blended with cold-setting resin at varying proportions and water treated at different temperatures to find a solution for the brick industry. Under optimal test conditions, the obtained fly ash-resin powder bricks have a compressive strength, hardness, water absorption, density and thermal conductivity of 11.24MPa, 47.37HV, 19.09%, 1.68 g/cm³, and 0.055 W/mK respectively. The sliding wear behavior is also examined. X-ray diffraction, FTIR analysis and scanning electron microscopy are used to study the structure-property correlation of these composites.

Keywords: Industrial waste

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