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## (57) Abstract :

The present disclosure relates to an HSO-brick comprising: 0-20 % of bacillus subtilis respective to fly ash cement; one part of fly-ash cement; 300-550 % of M-sand with respective to fly ash cement; 40-70 % of water respective to fly ash cement. The present disclosure also relates to a process for preparing an HSO-brick comprising the first mixture of 0-20 % of bacillus subtilis respective to fly ash cement and 40-70 % of water respective to fly ash cement; adding one part of fly ash cement and 300-550 % of M-sand with respective to fly ash cement to form a second mixture; mixing the second mixture in a concrete mixer drum with the first mixture; then molding the final mixture and cast into a brick mold of 19cmx9cmx 9cm; then curing and drying to form an HSO-brick. Furthermore, it discloses the mechanical and durability studies between commercial red brick, fly ash brick, and HSO brick by conducting compressive strength test, water absorption test, sodium sulphate test, Magnesium sulphate test, alkalinity test, and Sulphate resistance test.

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