Compressive strength of interlocking compressed earth brick units

ABSTRACT

This study presents a compressive strength test of ICEB units with two different methods under five condition. The first method requires that the tongue be removed by grinding the surface of the samples until the top and bottom surface are parallel with a tolerance of 0.1 mm for every 100 mm and tested with mortar filling (condition i) and without mortar filling (condition ii). The second method used steel plate which capped both the bed surfaces of the samples in order to provide the same parallel planes prior to testing for air-drying (condition ii), wet (condition iv) and oven-drying tests (condition v). The average compressive strength for the five conditions at 28 days is 5.11 N/mm2, 5.14 N/mm2, 5.66 N/mm2, 3.29 N/mm2 and 7.08 N/mm2 respectively. The ICEB units had compressive strength of more than 5 N/mm2 for all conditions, which is the minimum strength for the load-bearing brick, except for the wet condition. ICEB units tested using steel plate have a higher compressive strength of ICEB units with tongue removed tested with mortar filling is 1% higher than that samples without mortar filling. The ICEB units can therefore be used as load-bearing bricks and can be tested using steel plate without the need for tongue removed and mortar filling.