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Quality Assessment of Hollow Sandcrete Blocks in Minna, Nigeria

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Abstract : The properties of hollow sandcrete blocks produced in Minna, Nigeria are presented. Sandcrete block is made of cement, water and sand bound together in certain mix proportions. For the purpose of this work, fifty (50) commercial sandcrete block industries were visited in Minna, Nigeria to obtain block samples and aggregates used for the manufacture, and to also take inventory of the mix composition and the production process. Sieve analysis tests were conduction on the soil sample from various block industries to ascertain their quality to be used for block making. The mix ratios were also investigated. Five (5) nine inches (9'' or 225mm) blocks were obtained from each block industry and tested for dimensional compliance and compressive strength. The result of test shows that the grading of the sand falls within the limit required by BS 882: 1990. The sand particles generally satisfy the grading requirement of overall grading and also fall in at least one of the classification of coarse grading, medium grading or fine grading. This clearly indicates that the quality of the aggregates used for the production of sandcrete blocks in Minna, Nigeria are of good quality in terms of grading and workable mix can easily be achieved to obtain high quality product. Physical examinations of the block sizes show slight deviation from the standard requirement in NIS 87:2000. Compressive strength of hollow sandcrete blocks in range of 0.12 N/mm2 to 0.54 N/mm2 was obtained which is below the recommendable value of 3.45 N/mm2 for load bearing hollow sandcrete blocks. This indicates that these blocks are below the standard for load-bearing sandcrete blocks and cannot be used as load bearing walling units. The mix composition also indicated low cement content resulting in low compressive strength. Most of the commercial block industries visited do not take curing very serious. Water were only sprinkled ones or twice before the blocks were stacked and made readily available for sale. It is recommended that a mix ratio of 1:4 to 1:6 should be used for the production of sandcrete blocks and proper curing practice should be adhered to. Blocks should also be cured for 14 days before making them available for consumers.

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