Bagasse Fibers Used in Construction

Palijo, Rabail (School: PakTurk International Schools and Colleges, Gulshan-e-Iqbal Girls Campus)

There are numerous challenges facing today's construction industry. The usage of natural fiber in construction is widely used in building materials engineering. This research is based on quantitative elemental and mineralogical investigation based on two forms of bagasse i.e Fine Particles and Bagasse Ashes, which are the residue fiber left after extraction of juice from sugarcane. Different samples were investigated to find strength, density & porosity analysis. Preparation of Samples: Sample A = 1.6 gm Fine Particles + 100 gm sand + 50 gm cement Sample B = 1.2 gm Fine Particles + 100 gm sand + 60 gm cement Sample A = 1.6 gm Ashes + 100 gm sand + 50 gm cement Sample B = 1.2 gm Ashes + 100 gm sand + 60 gm cement The density of the samples was measured by finding mass using electronic weighing scale. And volume was measured using Vernier Calliper using the solid cylinder formula i.e. V= 3.141 (r x r) h (where r = radius and h = height) and the porosity of these samples was calculated by using weight before soaking/weight after soaking for 1hr. Results: Fine Particles Sample A - Mass = 144.8 gm, Volume = 92.069 mm3 and Density = 1.57 gm/ cubic milliliter Fine Particles Sample B - Mass = 154.4 gm, Volume = 112.0975 mm3 and Density = 1.37gm/ cubic milliliter Ashes Sample A - Mass = 151.6 gm, Volume = 106.439 mm3and Density = 1.42 gm/ Cubic milliliter Ashes Sample B - Mass = 158.2 gm, Volume = 101.935 mm3 and Density = 1.55 gm/ Cubic milliliter Fine Particles Sample A – Porosity: 92.078% Fine Particles Sample B - Porosity: 93.71% Ashes Sample A – Porosity: 96.61% Ashes Sample B – Porosity: 97.79% The research proves that using sugarcane waste material in construction is very effective as lighter weight bricks can be made with increasing percentage of Bagasse by weight which can also help Crack Control, Ductility and Brittle Concrete. Furthermore the usage of sugarcane in construction can reduce environmental pollution.

Awards Won: