ABSTRACT

This research delves into the integration of jute fiber as a reinforcement in cement, aiming to assess its impact on mechanical property. Improving the resilience of concrete is essential for its ability to withstand stress and deterioration. Its lifespan is increased by fortifying it to protect against weathering and chemical deterioration. In order to sustain larger loads and withstand outside influences like wind and seismic activity, strengthened concrete must preserve its structural integrity. Notwithstanding the intended properties, the addition of jute fiber for reinforcement poses difficulties and reduces the material's workability. Optimizing concrete performance in critical structures requires striking a balance between these elements. All types of concrete had the optimum workability after the jute fiber was removed. Jute fiber is locally available material and huge amount of jute is cultivated Bangladesh. As Bangladesh is the prime producer of natural fiber jute, this researched aimed to improve the concrete property with this biomaterial. We have conducted Compressive strength, Slump test. Compressive strength of concrete at 28 days without jute fiber is 18.2 MPa whereas with 0.5% jute fiber compressive strength is 14.2. Slump value for 0.5% is 50 mm which is quite suitable. Ordinary concrete breaks easily under crushing loads and fragments fall everywhere when it compresses. When compared to ductile materials, the failure pattern is brittle and it absorbs less energy before to failure. However, reinforced concrete with jute fibers crushes more slowly and does not disperse after failing. Jute fiber increases concrete's hardness and lowers brittle failure. For both structural and non-structural uses, such as buildings, pavements, walkways, and small-scale construction projects, jute fiber-reinforced concrete is beneficial. Furthermore, because of its greater resilience, jute fiber-reinforced concrete is chosen over regular concrete in structures designed to withstand earthquakes.