Environmentally Friendly Polymers for Enhancing Mechanical Properties of Sandy Soil for Paving Purposes

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ABSTRACT

Nowadays, Desert sand stabilization became a target as a paving replacement material. This laboratory study focuses on using two developed copolymer stabilizers to achieve this target. They were prepared in the emulsion state and had the same solid content and different chemical composition. They were diluted in many different concentrations to study the solid concentration effect on enhancing the mechanical properties of sandy soil. The mechanical properties were measured for each concentration and the measurements showed that as the copolymer solid concentration increased in the stabilized sand, the compressive strength, shear parameters, and abrasion resistance increased. On the other hand, the California bearing ratio decreased as copolymer solid concentration increased. The seven days stabilized sandy soil failed to resist water damage effect and it easily disintegrated by a little load within less than twenty-four hours of water submerging.

Keywords: Copolymer stabilizer, Environmental, Vinyl acetate, Methyl methacrylate.