

Effect of polysaccharide biopolymer on rheological and shear behavior of soil

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ABSTRACT

Biopolymer soil treatment is an environmentally friendly material, and achieving improved cementation is crucial for their potential applications. When considering field applicability, rheological analysis considering viscosity, etc., and derivation of the exact time and final strength required to develop the rigidity of the material are essential. This study examined the rheological and shear behavior of various polysaccharide biopolymers through viscometer, bender element, and fall cone tests. Biopolymer type, contents, curing time, curing conditions and temperature had critical effects on rheological and shear properties. Wave analysis in the microscopic area confirmed the bonding strength of biopolymer-treated soil and showed consistency with the trend of increasing geotechnical properties. The findings are expected to be useful in the construction of biopolymers tailored to the physical conditions of the construction site.

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