

Olivine for soil stabilization

ABSTRACT

The aim of this paper is to review the potential capability of olivine as a new binder for soil stabilization. The recent research shows that using environmental friendly materials for soil stabilization is expanding. The increasing amount of greenhouse gasses (GHG) such as CO₂ has also instigated research into finding environmentally friendly materials for soil stabilization. For quite some time, cement is one of the well-known binders in soil stabilization, but it releases high amount of CO₂, and energy consumption of cement have caused civil engineers to use some other materials or by-products to fully or partially replace cement for soil stabilization. Recently, alkaline activation process in soil stabilization is an interesting option at medium-term to fully eliminate traditional cementitious binders such as cement and lime. Olivine is a well-known material for CO₂ sequestration. Furthermore, the high amount of SiO₂, Al₂O₃ and Fe₂O₃ in olivine could classify this mineral as a pozzolanic material in soil stabilization.

Keyword: Carbonation; Olivine; Soil stabilization; Pozzolanic material; Dissolution