

## Evaluation of Durability Performance for Bio-Energy Co-Product

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**Abstract :** This experimental study was performed to investigate the effect of biofuel co-products (BCPs) with sulfur-free lignin addition on the unconsolidated on strength and durability behavior in pavement soil stabilization subjected to freezing-thawing cycles. For strength behavior, a series of unconfined compression tests were conducted. Mass losses were also calculated after freezing-thawing cycles as criteria for durability behavior. To investigate the effect of the biofuel co-products on the durability behavior of the four type's soils, mass losses were calculated after 12 freezing-thawing cycles. The co-products tested are promising additives for improving durability under freeze-thaw conditions, and each type has specific advantages.

**Keywords :** durability, mass lose, freezing-thawing test, bio-energy co-product, soil stabilization

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