

RHEOLOGICAL PROPERTIES OF ASPHALT BINDER MODIFIED BY SLAG DUST

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ABSTRACT

This study is to characterize the asphalt binder modified by slag dust from Pohang and waste concrete dust from Pusan in Korea. Also, fly ash from Tae-An and commercial hydrated lime were used to compare the effect of asphalt binder on modification. Laboratory tests were carried out. Specific gravity, gradation by particle analyzer, and particle shape by SEM were determined. The physical properties of original asphalt cement were determined, including specific gravity, penetration, softening point and ductility. Also, SUPERPAVE test by SHRP(Strategic Highway Research Program) was adopted to characterize the modified asphalt binder. Especially, RV(Rotational Viscometer) test and DSR(Dynamic Shear Rheometer) test were carried out to determine the dynamic characteristics of asphalt binder. The results indicated that the use of slag dust and waste concrete dust showed the positive effect, such as increasing softening point, decreasing penetration, and increasing the dynamic shear modulus of modified asphalt binder, which is highly related to the potential of permanent deformation.

KEY WORDS : slag dust, SEM, SUPERPAVE, RV, DSR