

송배전관로 되메움용 순환골재의 열저항 측정 및 기존 열저항 예측 모델과의 비교

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Thermal Resistivity Measurement of Recycled Aggregates and Comparison with Conventional Prediction Model

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Use of recycled aggregates that are constituents of concrete or asphalt-based structures has become popular because the recycling is an eco-friendly way to overcome the depletion of natural aggregates. In order to adopt the recycled aggregates for backfilling a power transmission pipeline trench, their thermal resistivity should be low enough to prevent thermal runaway in the transmission system. In this study, a series of laboratory tests with QTM-500 and KD2 Pro was performed to measure the thermal resistivity of recycled aggregates prepared from various sources. Relationships between the thermal resistivity of recycled aggregates and the water content have been obtained with consideration of compaction effort. Similar to natural soils, the thermal resistivity of the recycled aggregates decreases with increasing the water content. In addition, this study compared the experimental data with conventional prediction models for the thermal resistivity in the literature, which suggests the availability of the recycled aggregates as backfill material substituting for natural aggregates when backfilling the power transmission pipeline trench.

Key words : 송배전관로(power transmission pipeline), 되메움재(backfill material), 순환골재(recycled aggregate), 열저항(thermal resistivity)

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바이오디젤의 미세입자 배출특성

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Nano Particle Emission Characteristics of Biodiesel

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Biodiesels are well-known as alternative fuels. also we know that biodiesels increase NOx and reduce PM(Particulate Matter) by previous many studies. But PM in most these studies was considered about the mass. In this study, We have performed experimental test for PM and exhaust emission by mixed ratio of biodiesel in heavy duty diesel engine. PM was investigated by The nano particle number and the mass. The mass of PM was evaluated by using the standard gravimetric method, The number of PM was evaluated by using the EEPS(Engine Exhaust Particle Sizer), on the ESC(European Steady Cycle) mode. Sampled gas through dilutor was directly extracted from tail pipe and EEPS measured diluted exhaust gas. Biodiesel is made up of used cooking oil. Diesel as base fuel was sold on market and contains 2% biodiesel. The mass of PM was reduced 10% and the nano particle number was increased 5%. The particle number less than 40nm was increased, but the particle number more than 40nm is decreased.

Key words : Nano Particle(미세입자), PM(Particulate Matter, 입자상물질), BD(Bio Diesel, 바이오디젤), HD(Heavy Duty, 대형), EEPS(Engine Exhaust Particle Sizer), ESC(European Steady Cycle)

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