

# Characterization and engineering properties of dry and ponded class-F fly ash

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Characterization studies conducted on Class-F fly-ash specimens gathered from different producers in the southeastern United States confirm general trends reported for fly ash worldwide. Additional tests and detailed analyses explain the spread in specific gravity (interparticle porosity cenospheres), highlight the tendency to segregation and layering, and show marked ferromagnetism. Furthermore, data show that early diagenetic cementation-within days after wetting-hinders densification and produces a fabric that is prone to collapse. New procedures are specifically developed to diagnose and characterize early diagenesis, including (1) pH measurements as an indicator of diagenetic potential, (2) test protocols to assess early diagenesis

using oedometer tests and shear-wave velocity, and (3) procedures to determine realizable unit weights as reference values for the analyses of contractive or dilative tendencies and instability. In the absence of early diagenetic cementation, dil