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Closure to "Characterization and Engineering Properties of Dry and Ponded Class-F Fly Ash" by R. C. Bachus, M. Terzariol, C. Pasten, S. H. Chong, S. Dai, M. S. Cha, S. Kim, J. Jang, E. Papadopoulos, S. Roshankhah, L. Lei, A. Garcia, J. Park, A. Sivaram, F. Santamarina, X. Ren, and J. C. Santamarina

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We are grateful to the discussers for their comments. Without hesitation, contributions by Indian colleagues have played a critical role in today's understanding of fly ash properties and behavior. In fact, 14 references in the original paper recognize their work, including contributions by the discussers [data compilations referenced in our paper include data generated by the discussers and others—see also Kaniraj and Gayathri (2004) and Pandian (2004)]. Additional references provided by the discussers will benefit the readership, including the grain-size-based classification suggested in Prakash and Sridharan (2006).

Our experience with Atterberg limits agrees with that of the discussers. Still, the limits are informative. For example, fly ash specimens exhibit relatively high liquid limit (LL), low plastic limit (PL), and plot significantly lower than the A-line on the Casagrande chart. This is a clear indicator of accessible intragranular porosity, i.e., cenospheres [Fig. 1(c) in the original paper].

Furthermore, limits help cluster sediments into groups of similar behaviors. Consider the fall cone method as an index shear test, and

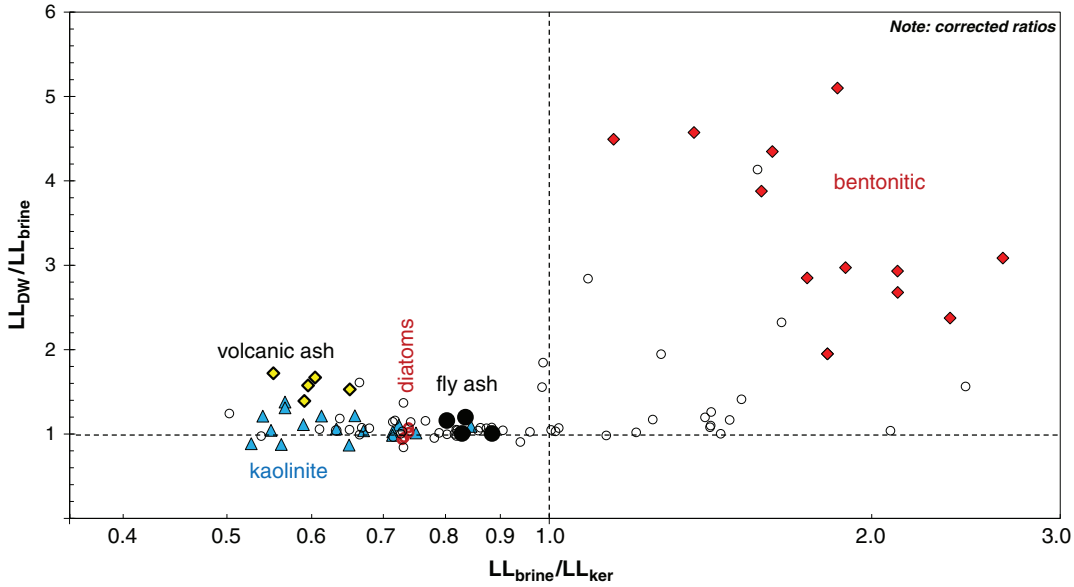

Fig. 1. (Color) Sediments and pore fluid chemistry. Solid black circles correspond to fly ash specimens reported in the original paper. Fly ash exhibits low electrical sensitivity to pore fluid chemistry. For reference, the plot distinguishes data for clays (bentonite and kaolinite) and sediments with intragranular porosity (volcanic ash and diatomaceous soils). Data for fly ash specimens cluster near diatoms and volcanic ash. LL_{brine}, LL_{ker}, and LL_{DW} are the liquid limits determined using the fall cone method for sediment pastes prepared with brine, kerosene, and deionized water, respectively [values corrected for mass density—refer to Jang and Santamarina (2017)].

compare the liquid limits obtained with pastes prepared with water, brine (to collapse double layers), and kerosene (to alter van der Waals effects). These three liquid limits place fly ash specimens next to diatoms and volcanic ash (Fig. 1). In terms of the new fines classification chart by Jang and Santamarina (2016), fly ash specimens have low electrical sensitivity to pore fluid chemistry and low plasticity, hence fly ash classifies as L/L.

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