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Engineering properties of Chinese loess discharged from the Yellow River into the sea

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Chinese loess has a uniqueness in its scientific and societal implications. Large amounts of loess are carried by the Yellow River, from the Loess Plateau of China into the Bohai Sea, forming the Yellow River Delta. Consequently, the engineering properties of loess have been changed from on land to in the sea. The estuarine loess has been investigated using samples from tidal flats of different depositing ages. The wet density, natural moisture content, specific gravity, Atterberg limits, grain size distribution, microstructure and mineral composition were determined. The dynamic characteristics and behaviour were assessed by dynamic triaxial tests. The results show that the estuarine loess can be classified as silty loess, with the unit weight and water content increasing after being discharged into the sea, while the plastic index decreases. The liquefaction resistance of the estuarine loess is better than that on land. In addition, the engineering properties show a strong relationship to the long-term history of the sea-going site. This study is of great significance to better understanding the mechanism and prevention of loess-related geological disasters.

