

Abstract

This work looks into the effect of added lime on consistency limits of silty clay. It was carried out under the support of GAUK 62008 grant. In this work changes of consistency limits of a loessy soil from the borrow pit Horky nad Jizerou with amount of added quicklime (CaO) and curing time were observed. From the development of consistency limits the lowest amount of quicklime needed for the establishment of long – term (pozzolanic) reactions in the soil was determined.

Consistency limits were determined following standardized procedures in an accredited laboratory. Determination of the liquid limit was conducted using the 80 g/30° fall cone. Firstly sample heating caused by the exothermic nature of the slaking reaction



and rapid soil flocculation after the lime addition were observed. Furthermore increase of the plastic limit, unpredictable behavior of the liquid limit and therefore influenced behavior of the plasticity index in agreement with findings stated in the research part were observed. The results showed finishing of the modification reactions within 48 hours after the lime addition too. Findings stated by Rogers et al. (1997) about the value of the lowest amount of quicklime determined by the consistency limits method being lower than the value determined by the pH measuring method were confirmed as well.

Lastly one can say that for civil engineering purposes the determination of the lowest amount of quicklime by the pH measuring method is better because this method provides clearly defined procedure and a quick result compared to the consistency limits method, which is slow, arduous and the rate of its affection caused by the soil mineralogy is higher than by the pH measurement method.