

Elżbieta PILECKA¹, Jakub ZIĘBA¹, Ievgen TYMOSHENKO²

¹Cracow University of Technology, ²National Mining University, Dnipropetrovsk, Ukraine

Dynamic properties of an calcareous sludge in triaxial test

Abstract

The article presents the results of triaxial tests for determining the dynamic properties of calcareous sludge samples from the landfill on the area of the closed Solvay Sodium Plant in Krakow. Tanks filled with calcareous sludge occupied a total area of over 30 hectares. The tested samples in undisturbed condition have been taken from borehole of 20 m depth. In the tests seismic compression waves (P) and shear waves (S) velocity were measured. The tested samples were partially or fully water saturated. P- and S- waves velocity were determined in different effective stresses i.e. 50, 100, 150, 200kPa. The test was taken in the triaxial apparatus equipped with Bender element. Methodology according to British Standard 1377:1990 was used. Based on the determined values of P- and S- wave velocity and the bulk density, the dynamic modules of calcareous sludge were estimated. Changes of the P wave velocity to S wave ratio were also analyzed. The final test results of an calcareous sludge samples show great variation values of the determined parameters. For civil engineering purpose, determination of the properties of calcareous sludge should be carried out on a large number of samples.