

## Summary

The presented diploma thesis is focused on possible use of waste from glass and foundry sands deposits of Provoďín. The mineralogical and chemical composition, mechanical and physical properties, the specific surface area and parameters of pore area were studied. X-ray analysis proved the presence of kaolinite, illite, quartz and accessory microclin. Silicate analysis shows dominant presence of SiO<sub>2</sub> 80.52%, then Al<sub>2</sub>O<sub>3</sub> 11.36% and K<sub>2</sub>O 2.14%.

This diploma thesis is focused on a possible use of studied material at three main areas: the potential use as a clay component in a raw material mixture for making of hydraulic lime, the use as a kaolinite absorbent and the potential use as a geotechnical material. The studied material was experimentally mixed with limestone in a ratio of 10; 15; 20 a 25 wt %. This mixture was subsequently burnt in the temperature range from 850 to 1,200°C. New phases were identified by an X-ray diffraction analysis. The results prove the presence of characteristic phases for hydraulic limes (C<sub>2</sub>S, C<sub>3</sub>A, C<sub>4</sub>AF). The formation of new phases depend on the temperature. The most of them are formed at a temperature of 1050°C and higher.

For the characterization of a specific surface area and parameters of pore areas there were used simple studied material and thermally modified samples of simple material from temperatures of 500°C and 900°C. The results show that the highest specific surface area is disposed by a simple material (S<sub>BET</sub> 7, 4 m<sup>2</sup>/g). The thermally modified samples show a rapid decline of all parameters of the pore area. The possible use of studied material in geotechnics was based on the results of physical and mechanical properties. These results were compared with valid Czech technical standards, focused on the use of studied material as a sealing clay in dams of small ponds and a sealing clay in waste dump.