Electroosmotic dewatering has been tested in laboratory cells on four different porous materials: chalk sludge, iron hydroxide sludge, fly ash and biomass sludge from enzyme production. In all cases it was possible to remove water when passing electric DC current through the material. Casagrande’s coefficients were determined for the four materials at different water contents. The experiments in this work showed that chalk could be dewatered from 40% to 79% DM (dry matter), fly ash from 75 to 82% DM, iron hydroxide sludge from 2.7 to 19% DM and biomass from 3 to 33% DM by electroosmosis. The process was not optimised indicating that higher dry matter contents could be achieved by electroosmosis. It was possible to relate Casagrande's coefficient directly to the electroosmotic coefficient obtained by dewatering experiments.