Geotechnik im Bauwesen
Geotechnical Engineering
Univ.-Prof. Dr.-Ing. Martin Ziegler

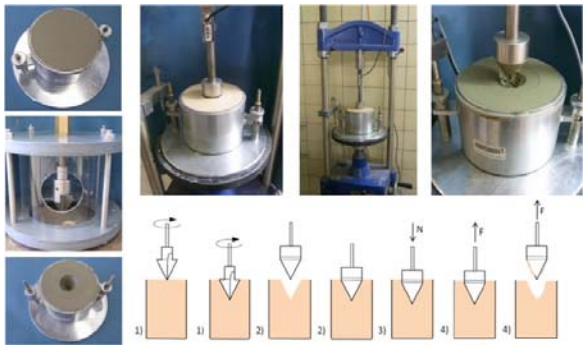
Geotechnical Engineering

RWTH AACHEN UNIVERSITY

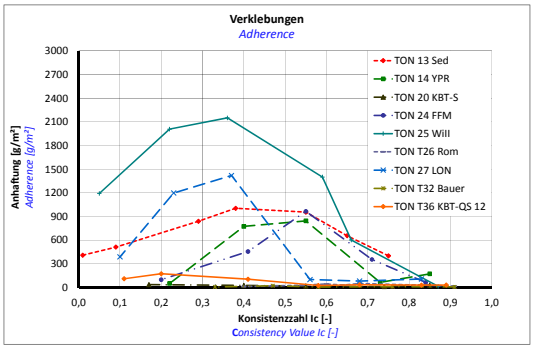
A new method to evaluate the clogging potential for EPB tunnelling

Aim of the research project

During mechanical tunnel driving in fine grained soil or rock the excavated material often sticks to the cutting tools or conveying equipment which may cause serious problems during the construction process. The possible effects are diverse with different geological (mineralogy, mountain water inflow, etc...) or operational (advance mode, stand stills, etc.) conditions. In a joint research project, which has been funded within the framework of the German BMBF/DFG “GEOTECHNOLOGIEN” program, the acting processes were investigated and new methods for their quantification and manipulation were developed.



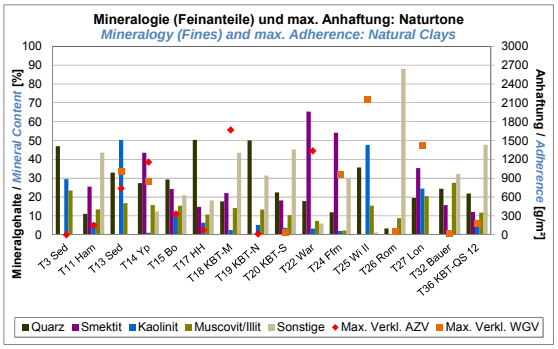
Cone pull-out test



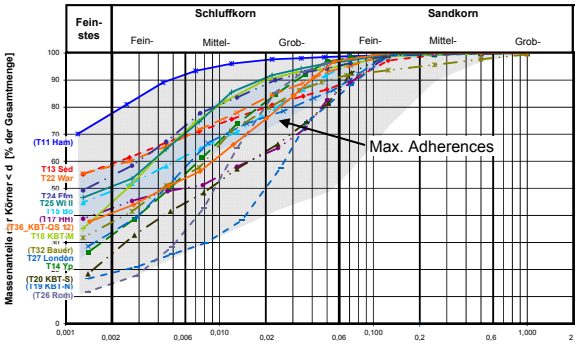
Adherences over consistency

Methods and results

The “cone pull-out test” was developed as a new standard test method to determine and quantify the clogging potential of different soil or rock types. This is very much dependent on the consistency and the water content respectively. In numerous laboratory tests strong correlations with the mineralogy and the grain size distribution could be shown. The test is also used to evaluate new concepts for manipulation methods to reduce adhesion and/or clogging.



Mineralogy and adherences



Grain size distributions

Contact

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