

EFFECT OF SPECIMEN PRECONDITIONING ON SALT DILATION ONSET

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Abstract

Site-specific salt properties obtained from laboratory testing are typically used to develop the dilation criterion used during geomechanical studies. Often, test result variability, combined with the limited number of specimens available for testing, reduces the confidence in developing a site-specific dilation limit. A laboratory testing program was performed that strived to identify possible sources of the variability and methods or procedures that could be applied to limit their impact on the quality of the test results. As part of the laboratory testing program, 19 triaxial compression constant mean stress tests were performed to assess the impact pretest procedures have on the dilation of salt. Cylindrical salt specimens were subject to a hydrostatic stress of 20 MPa at room temperature for 1, 5, or 10 days before testing. The results of the tests performed on preconditioned specimens were compared with test results performed on specimens that were not preconditioned. On average, the onset of dilation for the specimens preconditioned for 10 days was about 12 percent greater than specimens preconditioned for 1 day and 21 percent greater than specimens that were not preconditioned.

Key words: Salt Properties, Rock Mechanics, Salt Dilation, Instrumentation and Monitoring, Laboratory Testing, Specimen Preparation