

ABSTRACT

Laboratory data acquired from constant mean stress tests are presented for bedded salt. The data from the constant mean stress tests were evaluated to determine the effects of mean stress, Lode angle, and fluid pressure on the dilation limit. A new dilation criterion is proposed in this paper that addresses some of the shortcomings of previous dilation criteria developed for salt. The criterion proposed provides a dilation limit for states of stress ranging from triaxial compression to triaxial extension (i.e., Lode angles ranging from 30° to -30°). The effects of mean stress and Lode angle determined from the experiments presented here were used in the development of the criterion. The effects of fluid pressure are also discussed; however, the proposed criterion does not include fluid pressure dependency in the mathematical formulation.

Keywords: Caverns for Gas Storage, Constitutive Model Development, Rock Mechanics, Salt Damage, Dilation, Laboratory Testing