# Normalization characteristics of unsaturated undisturbed Ili loess with high level of soluble salt contents

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## Abstract

In order to reveal the mechanical characteristics of the unsaturated undisturbed Ili loess in westerly region, the isotropic compression tests controlling suction, the triaxial shrinkage tests controlling net mean stress and consolidation shear tests controlling net confining pressure and suction were carried out under different soluble salt contents. The objective of investigation is to explore the normalized characteristics of compression curve, soil water characteristic curve and critical state line. The results show that the ratio of void ratio to initial void ratio and the ratio of net mean stress to yield net mean stress are suitable to normalize the compression curves under different suctions in the isotropic compression test. The soil water characteristic curves under different net mean stresses in the triaxial shrinkage test can be normalized by the ratio of water content to saturated water content and the ratio of suction to air entry value. In the consolidation shear test controlling constant suction, the unsaturated critical state lines under different suctions can be normalized by the corresponding saturated critical state line in the plane of effective net mean stress and deviator stress. The unsaturated critical state lines under different suctions in the plane of void ratio and net mean stress can be normalized by means of degree of gas saturation and the ratio of unsaturated void ratio to saturated void ratio under the same effective net mean stress. The results provide potential benefits for the constructions of large-scale water conservancy projects in the special area of Central Asia.

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