

两种不同沉积类型界面盐岩力学特性试验研究

姚院峰, 杨春和, 纪文栋, 马洪岭, 宗显雷*

(中国科学院武汉岩土力学研究所 岩土力学与工程国家重点实验室, 湖北 武汉 430071)

EXPERIMENTAL STUDY OF MECHANICAL PROPERTY OF TWO TYPES OF SEDIMENTARY SALT ROCK WITH INTERFACE

YAO Yuanfeng, YANG Chunhe, JI Wendong, MA Hongling, ZONG Xianlei*

(State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Sciences, Wuhan, Hubei 430071, China)

摘要

参考文献

相关文章

Download: [PDF](#) (429KB) [HTML](#) 1KB Export: [BibTeX](#) or [EndNote](#) (RIS) [Supporting Info](#)

摘要 金坛含盐系为一套浅湖相-泻湖相-蒸发岩相成盐构造,由机械沉积与化学沉积作用共同形成;潜江含盐系湖盆环境为常年性较深水分层盐湖,主要在深水、缺氧、静水环境下以机械沉积形成,因此2种沉积类型界面并不相同。针对2种不同沉积类型界面盐岩,分别进行单轴、三轴压缩及剪切试验研究,深入分析试验过程中盐岩力学特征变化情况及其力学含义,同时对试样破坏特性进行对比分析。研究发现:2种界面盐岩试样都表现出较好的延性特征,未发生崩溃式破坏;裂纹集中分布于界面处,纯盐岩段均少见裂纹生成,与金坛盐岩试样相比,潜江盐岩界面对试样变形的限制作用更突出;2种界面盐岩试样剪切峰值应力与纯盐岩相当,说明界面剪切破坏由盐岩的力学特性决定。研究成果对进一步深入研究我国不同地域层状盐岩地下储气库选址与建设具有一定参考意义。

关键词: 岩石力学 盐岩 沉积类型 界面 单轴压缩 剪切试验 三轴压缩 破坏机制

Abstract: Jintan bedded salt rock caused by mechanical and chemical deposition actions is structured under shallow lacustrine-lagoon facies-evaporite rock facies geological environments. However, Qianjiang bedded salt rock, whose lake basin environment is perennial deep water bedded salt lake, is formed by mechanical deposition action under the deep-water lake, oxygen lack and calm water environments. So, the interfaces between these two types of salt rocks are different. According to the characteristics of interfaces between Jintan and Qianjiang salt rocks, the uniaxial compression tests, shear tests and triaxial compression texts are carried out to investigate the interfaces of typical Jintan and Qianjiang salt rock specimens; and the complete stress-strain curves and their mechanical significations are deeply analyzed. Simultaneously, the specimens failure characteristics are also investigated. It is shown that: (1) Both of the two kinds of salt rock specimens present good ductility and the collapse failures don't occur. (2) The cracks are generated mainly around the interfaces. The interface of Qianjiang salt rock plays a prominent role in limiting the deformation of the samples compared with the Jintan's. (3) The peak shear stresses of both interface salt rocks are almost equal to the pure salt rock's, which indicates that the shear failure of interface salt rocks is decided by the mechanical behavior of pure salt rock. The results could provide some references for selection and construction of gas storages.

Keywords: rock mechanics salt rock types of deposition interface uniaxial compression shear test triaxial compression failure mechanism

Received 2011-07-08;

引用本文:

Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

作者相关文章