

论文

一种含夹层盐岩模型材料的试验研究

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摘要:

以江苏金坛盐矿天然含夹层盐岩为原型, 采用天然盐粉、精制石英砂、松香和酒精等作原料, 根据相似原理, 经过多次配比试验, 研制出一种含夹层盐岩相似材料, 其密度、泊松比、弹性模量、抗压强度等物理力学参数基本满足相似理论设定参数, 其变形特征和破坏特性也与天然含夹层盐岩相似。试验结果表明: 压制力增大, 含夹层盐岩模型材料的力学强度越高; 含水率和夹层厚度增加, 将弱化其力学强度; 夹层总厚度相同时, 夹层数目多的模型材料比夹层数目少的力学强度略高。

关键词: 含夹层盐岩; 夹层; 模型材料; 相似理论

Experimental study on a similar material of rock salt with interlayer

Abstract:

The rock salt with interlayer in Jintan Salt Mine in China was regarded as the prototype in this experiment. A similar material of rock salt with interlayer by using natural salt powder, quartz sand, rosin and alcohol based on similarity theory was made by numerous experiments. The physical and mechanical parameters of model material basically met the similar conditions, such as bulk weight, Poisson's ratio, elastic modulus, compressive strength. The deformation characteristics and failure characteristics were similar to the natural bedded rock salt. The effect of pressure, moisture content, the interlayer thickness and the number of interlayer for mechanical properties of the model material was studied. The results show that the higher compaction force of the similar material is, the more stronger mechanical strength is. The increasing of moisture content and interlayer thickness of the similar material will weaken its mechanical strength. When the total thickness of interlayer is similar, then the mechanical strength of similar material with more interlayers is slightly higher than the one with less interlayer.

Keywords: salt rock with interlayer; interlayer; similar material; similarity theory

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