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论文

多层采动条件下采空区覆岩残余裂隙发育规律的实验研究

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摘要：

采空区残余裂隙的发育情况是采空区充填注浆设计需要考虑的重要因素。本文采用相似材料模拟实验的方法,探讨多层采动条件下采空区覆岩残余裂隙的分布规律和发育程度。研究结果表明：开采结束后采空区残余裂隙在剖面上具有明显的分区性,从采空区两侧到中间可划分为残余裂隙发育区、裂隙压密区和地表张拉裂隙区； 残余裂隙发育区的残余裂隙率一般介于19.54%～45.27%之间,裂隙压密区的残余裂隙率介于9.28%～19.33%之间； 离层裂隙发育高度是受采宽和累计采厚综合影响的结果。研究成果对于老采空区建筑地基的稳定性评价、采空区处治工程范围与深度的确定、注浆孔的合理布置、单孔注浆量的合理计算等都具有重要的理论研究价值和实际指导意义。

关键词： 多层采动〓采空区〓残余裂隙

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EXPERIMENTAL STUDY ON DISTRIBUTION LAW OF RESIDUAL FISSURES IN OVERLYING STRATUM UNDER MULTIPLE SEAM MINING

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Abstract:

The developmental state of residual fissures in goaf is an important factor in the design of goaf filling and grouting. Under the conditions of multiple seam mining,this paper discusses the distribution of residual fissures in overlying stratum by means of simulated experiment of similar materials. The test results show that after the end of mining the distribution of residual fissures in goaf has obvious characteristics in different zones. From both sides to the middle of goaf,it can be divided into three zones: residual fissure zone,fissure compacted zone,and surface tensile fissure zone. The fissure rate of residual fissure zone generally varies from 19.54% to 45.27% while the fissure rate of fissure compacted zone varies from 9.28% to 19.33%. The developmental height of separated strata is decided by both mining width and total mining height. In both theory and practice,this study has the great importance in estimation of stability of construction site on the goaf,determining the range and depth of goaf management,reasonable arrangement of injected hole,as well as reasonable computation of grouting amount for single injected hole.

Keywords: Multiple seam mining,Goaf,Residual fissure

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