

论文

薄煤层破碎顶板综采工作面“拖管”式充填试验研究

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摘要:

针对黄河北薄煤层、薄基岩、厚冲积层、顶板破碎、吨煤利润低、地表建筑物密集、全部跨落采煤地表下沉大等问题, 在对综采架后自压式矸石充填、(似)膏体充填和(超)高水充填及高位离层注浆充填对比分析的基础上, 提出了综采架后跨落带“拖管”充填的概念。结合赵官煤矿1703综采工作面开采技术条件, 相似材料模拟试验和原生矸石、淋浆矸石压实度仿真试验, 提出了“冒落”矸石压实分区和残余碎胀系数概念和“拖管”式充填时间-空间模型及工艺系统, 并在该工作面试验成功。结果表明: 薄煤层、破碎顶板、缓仰斜工作面, 在不改造支架、不需堵漏的情况下进行跨落带“拖管”式充填是可行的; 根据采-充量预计地表下沉系数为0.4, 地表最大下沉量为50 cm。

关键词: 薄煤层; 破碎顶板; 综采工作面; “拖管”式充填; 冒落矸石压实分区; 残余碎胀系数

Experiment research on hauling pipeline backfilling in the fully mechanized mining face of thin coal seam and broken roof

Abstract:

Aiming at some special characteristics of coal seam in the north Yellow River of where occur the thin bedrock, thin coal seam, thick alluvium, broken roof with low profit of every ton coal, the dense structure on surface, the large surface subsidence of long wall caving mining, the conception was put forward to the pipeline hauled backfilling in the caving zone behind mechanized supporter based on comparision and analysis of self pressure gangue backfilling behind mechanized supporter, similar paste backfilling, super high water backfilling and high separation layer grouting. The conception was put forward to the self pressure zone of gangue caved, residual bulk factor and time space mode and technology system of pipeline hauled backfilling, and the experiments was succeeded in the working face according to the mining technology condition of Zhaoguan Coal Mine fully mechanized face 1703, similar material simulatin test and the compaction degree simulatin test of rural gangue and backfilling gangur. The results show that the pipeline hauled backfilling is successful in the thin seam, broken roof, gentle sloping face, and the supporter is not to be reconstructed; the expective surface subsidence coefficient is 0.4 according to the amount of mining and backfilling, and the maximum surface subsidence is 50 cm.

Keywords: thin coal seam; broken roof; fully mechanized mining face; pipeline hauled backfilling; self pressure zone of gangue caved; residual bulk factor

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