

伪硬顶高地压水患巷道围岩综合控制技术 及工程应用

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摘要 不同顶板岩性组成对巷道围岩稳定性影响很大, 特别是对遇水软化、风化程度高的伪硬顶板, 必须区别对待。通过岩层粉末的X射线衍射试验测定了7244工作面伪硬顶板——砂岩物相组成, 掌握了该顶板岩石遇水岩性衰减强度弱化、岩面风化损伤滑移断裂原因的微观组成结构, 进一步分析了锚固体承载结构预应力损失锚固失效的内在机理, 指出这类伪硬顶高地压水患巷道, 最核心的问题是治水, 解决了水患, 伪硬顶就是真硬顶。在**高强高预应力锚杆支护技术体系**的基础上, 通过围岩内部适量注浆、表面喷混凝土封闭措施, 减弱和消除地下水对煤岩体及锚固体的影响。针对该类巷道提出的“**三区三顶三支护**”围岩综合控制思想及技术, 在现场初步得到了成功应用, 为该类煤层巷道的锚杆支护技术提供了参考和借鉴。

关键词 [采矿工程](#); [伪硬顶](#); [衍射试验](#); [风化损伤](#); [锚固失效](#); [三区三顶三支护](#); [工程应用](#)

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SYNTHETICAL CONTROL TECHNIQUE AND ENGINEERING APPLICATION TO ROADWAY WITH FALSE-HARD ROOF HIGH SURROUNDING PRESSURE AND WATER DISTURBANCE

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Abstract

The composition of the roof rock has a great influence on the stability of the roadway surrounding, especially for those roadway with the

false-hard roof, which will be easily weathered or be weakened when encountering water. The composition of the false-hard roof rock sampled from the 7244 working face was determined with the X-ray diffraction experiment. The mineral composition of the false-hard roof was obtained. The results explain why the roof rock strength becomes weak encountering water or weathering. The inherent mechanism of the loss of the prestressed bolting and loosening between bolts and surrounding rock was analyzed. On the basis of these analysis, the conclusion that the key technique is water control in such condition is proposed. False-hard roof can turn into true-hard roof when no water invading. Based on the supporting technique system of the high strength and high prestressed bolting, rock grouting and surface guniting can decrease or even avoid the water influence on the bolts, surrounding rock and coal. At last, a comprehensive measure, named three zones-three roofs-three supporting techniques, has been put forward and applied successfully in the 7244 roadway. This technique can be used in the similar roadway supporting.

Key words

[mining engineering; false-hard roof; X-ray diffraction experiment; weathered damage; losing of the prestressed bolting; three zones-three roofs-three supporting techniques; engineering application](#)

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