



Geological characteristics of filling structures in coal formations of Handan Coalfield

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Abstract

Based on the systematical summary of filling structure types and their characteristics, the formation mechanisms of the filling structures and their influences on coal minings were studied. When the mining depth gradually increases, the stress and head pressure also increase. The nature of different combinations of rock and the geological engineering features of rock group will be changes under the stress and action of groundwater. The terranes will be broken and the filling structures will be formed. Especially in soft rock strata and broken filling formation, the disaster will be even more serious. It is necessary to attach great importance to actively develop the control technical studies.

Key words: *Filling structure, Soft rock, Characteristics of disaster prevention*

1. Introduction

Recent years, many filling structures in the mining process have been discovered at the following places in Handan: Kangcheng, Guo'erzhuang, Tao'er, etc. Take Kangcheng as an example: Seven filling structures have been found, which had great impact on daily safe production and caused a significant economic loss. These filling structures are different from the common structures in sedimentary strata. They have clear boundaries, morphological features, mixed filling ingredients, poor filling regularity. Besides, the filling substance undergone the short diagenetic process, the low degree of compaction. And some are loosely adhesive-compacting, others are empty without filling and even some rocks are full by

fracture water (Jiang, 2006). It is quite difficult to analysis the detailed causes of complicated filling structures. So it is necessary to research deeply and systematically for these filling structures, analyze their features, study its impact and harm and more important, put forth proposals of preventing geological disasters (Cheng *et al.*, 2006).

The geological conditions in Kangcheng Coal Mine are complex. During the excavation of the 161 yards in Two-Seven Shimen, there is a wide range of limestone aquifer, and the water inflow is as high as 330 m³ / h, which makes it impossible to dig the water-main and at the same time there is no flood protection. All of these may make it dangerous for the security of production and electricity fee is up to 208 million RMB per year. Therefore we need to plug the 161 water flow.

But the tunnel country rock of Two-Seven Shimen