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BACKFILLING TECHNOLOGY OF SUBSTITUTING WASTE AND FLY ASH FOR COAL UNDERGROUND IN CHINA COAL MINING AREA

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Abstract

As one of the very few countries using coal as its dominant energy resources, China has the coal production exceeding one thirds of in the world, added to it are the problems of environmental damages and soil resource destructions result from the solid waste, such as mining waste discharged in the process of coal production and fly ash deserted from the electric power plant etc. In this paper, the mineral ingredient of waste and fly ash was tested by X-ray Diffraction. Meanwhile, the deformation characteristics of the backfilling bodies with different waste and fly ash mixture ratio was tested by MTS815.02 electro-hydraulic servo rock mechanical test system, the optimal mixture ratio of waste and fly ash was 1:0.3, and it proposes that the backfilling body should be firstly tamped after being backfilled into the goaf. Moreover, technological framework for backfilling technology of substituting waste and fly ash for coal underground was expatiated, and the system layout of substituting waste and fly ash for coal was introduced systematically. Ultimately, the engineering application results witnessed the solution for the problems of environmental damages and soil resource destructions result from the waste and fly ash, based on the effective control of the strata and ground, and the environmental benefits and economic benefits with high production and recovery.

Key words: backfilling technology, waste and fly ash, coal mining, engineering application

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