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An Analysis of the Gas-Solid Plug Flow Formation: New Insights into the Coal Failure Process during Coal and Gas Outbursts

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Abstract

Researches on the failure process of coal during coal and gas outbursts are of great importance in underground mining. Based on the theories of coal spherical shell failure, coal spallation and coal powder pneumatic conveying, the flow state and transport mechanism of coal and gas outbursts were studied. This paper concludes that in the outbursts' development stage, with the front of the outburst being gradually exposed to air, the gas gradient behind the outburst acts as a reciprocating air knife

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