

This paper investigates the frictional characteristics and anisotropy of rock by analyzing the coefficient of variation of the friction coefficient ( $f$ ) and the anisotropy index of rock friction ...

relationship between the impact performance and the collision coefficient  $c$  is analysed. When  $c$  is in the range of 9-11, the impact piston's design of a high-power rock drill can be satisfied.

In response to the issues of overheating of the shell and insufficient impact energy of the hydraulic rock drill, this paper focuses on the ...

Abstract Considering the insufficiency of numerical study on the percussion characteristic of hydraulic rock drill, which restricts the improvement of efficiency and reliability, ...

The impact mechanism of the hydraulic rock drill is mainly composed of cylinder body, impact piston, reversing valve, and high pressure accumulator [7]. The impact piston and the ...

The authors in [15] correlated drilling variables and blast performance to the data analysis of different drilling parameters such as ...

The rock breaking process by impact hammers can be divided into two sub-processes: the piston impact on the drill rod and the penetration into the rock. By applying ...

The formation of a pressure relief zone is crucial for rockburst prevention during drilling pressure relief. This study investigates the mechanical behavior of high-stress rock ...

To develop a method that can rapidly, efficiently, and economically estimate UCS across different rock types and engineering conditions based on while-drilling tests, this study ...

In addition, the drilling processes of drill bits with different impact velocities, shapes, and angles are simulated to evaluate the effects of operational parameters on the ...

Abstract In response to the issues of overheating of the shell and insufficient impact energy of the hydraulic rock drill, this paper focuses on the hydraulic rock drill with alternating front and rear ...

Drillability is an important parameter in order to assess the influence that intact rock properties have on performance prediction and cost ...

In the trench process of underground diaphragm walls, slurries play important roles in stabilizing the walls.

Nevertheless, the slurry effect on rock breaking using impact drill bits ...

Abstract Rock drilling is widely used in various types of rock engineering. Rock boring is often used in tunneling, underground mining, and nuclear waste depository. This ...

This study focuses on the ore recovery blasting in fractured rock structures using the sublevel caving method. Through orthogonal experiments and range analysis, the factors of ...

Drilling, in the field of rock excavation by drilling and blasting, even for excavation by non-blasting method, is the first and essential operation. The drilling mechanism, rock ...

In response, a theoretical model of the axial impact hammer motion mechanism under drilling fluid driving conditions was established, and the speed and frequency of ...

Many empirical tests have also been proposed to predict the drilling performance such as Point Load Strength, Schmidt Rebound Hardness, Shore Scleroscope Hardness, ...

The results indicated that cutter penetration depth during rotary percussion drilling could be increased by 16.04% compared to that during conventional drilling. Under the same ...

The authors in [15] correlated drilling variables and blast performance to the data analysis of different drilling parameters such as hardness coefficient, minimum SE drilling, ...

The excavation of rock, whether in mining, petroleum, or civil engineering projects, predominantly relies on traditional drilling techniques. Across these applications, drilling bit ...

The relationship between the impact performance and the collision coefficient  $\eta$  is analysed. When  $\eta$  is in the range of 9-11, the impact piston's ...

The uncertainty associated with estimating the properties of in situ rock masses has a significant impact on the design of slopes and excavations in rock. The examples that have been explored ...

It can be seen from the analysis that in the rock drill, the relationship between the shank diameter, the drill rod diameter, and the impact diameter is larger than the ...

The stress wave produced by the piston impact, on the drill rod, is an important factor affecting impact performance. It is particularly important to control the stress waveform generated by ...

For the phenomenon of a hydraulic rock drill based on an overlapped reversing valve, the mechanical structure of the overlapped reversing form was proposed, which affected the ...

The relationship between the impact performance and the collision coefficient  $\eta$  is analysed. When  $\eta$  is in the range of 9-11, the impact piston's design of a high-power rock drill can be satisfied. ...

For the phenomenon of a hydraulic rock drill based on an underlapped reversing valve, the mechanical structure of the overlapped reversing form was ...

To achieve high-efficiency drilling in hard formations, the rotary percussive drilling tool was designed to improve rock-breaking efficiency. Currently, few studies are conducted to ...

The study also explored the influences exerted by lateral pressure coefficient (LPC), burial depth, and hole configuration on the propagation of rock cracks.

Regarding operational parameters, the impact velocity has little effect on the penetration coefficient, while the shape and angle of the drill bit have a significant effect on the penetration ...

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