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Introduction

e ability to withstand brittle coal fracture under high strain rate is referred to as coal's dynamic fracture toughness. In mining engineering, accurate acquisition of the dynamic fracture toughness is crucial for controlling coal and rock stability, supporting roadways, and preventing rock bursts. Researchers have so far used a split Hopkinson bar to investigate the dynamic fracture toughness of a variety of rock materials, including granite, marble, gabbro, limestone, asphalt mixture, sandstone, shale, concrete, ceramics, and glass. On the fracture properties of coal under dynamic loads, there are, however, few reports.

mechanical properties of coal exhibit clear anisotropy, which is crucial