

EXPLOSIVES SELECTION TO MINIMIZE THE RISK OF DUST EXPLOSIONS IN UNDERGROUND MINES

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ABSTRACT

Dust explosions in underground sulphide and oil shale mines result from the detonation of explosives in the blasting operations. Explosive composition, oxygen balance, priming and ideality of detonation were examined theoretically and experimentally in the presence of reactive sulphide dust. It was found that the temperature as well as the chemical composition of the gaseous products of detonation are the controlling parameters related to the explosive. Non aluminized, oxygen balanced emulsion explosives were proven to be relatively safe, while explosives creating combustible products were proven to be extremely dangerous due to the secondary flame they generate. Since a large number of dusty orebodies are often very friable, low density emulsion explosives are also examined for application in production blasting.