Although progress in rock-dusting in coal mines in the United States has improved considerably since 1923, when scarcely a dozen mines used rock dust, the 462 mines rock-dusted in 1936 represent only a small percentage of the total number of mines in operation.

The application of rock dust to underground surfaces in American mines has been an important factor in preventing widespread explosions; however, while some of the most dangerous mines have been rock-dusted fairly adequately, in other mines rock dust has been applied without regard to the amount required to prevent propagation of flame.

SPECIFICATIONS

Specifications3/ for rock-dusting were formulated by the American Engineering Standards Committee in 1927 and no changes have been made since then, although a committee of the American Institute of Mining and Metallurgical Engineers is now considering revision of these standards. The principal requirements are:

Size of dust. - The finer the dust, the more easily is it raised into the air with coal dust to prevent propagation of an explosion. All of the dust should pass through a 20-mesh sieve, and at least 50 percent should pass through a 200-mesh sieve. (If a coarser dust is used, the amount applied must be proportionately larger.)

Tests conducted by the Bureau of Mines show that finer dust is advantageous but that there is no additional advantage in having it finer than 70 percent through 200-mesh.

Character of dust. - The dust preferably should contain not more than 5 percent combustible matter nor more than 25 percent free silica. The rock dust should be as light in color as possible.

Enough dust must be present to maintain the incombustible matter at or above 55 percent. Where methane is found in the ventilating current, the amount of incombustible material specified must be raised approximately 10 percent for each 1 percent of gas.

Redusting. - After dusting, samples should be taken at regular intervals and analyzed to determine whether or not additional rock-dusting is necessary.

The maximum permissible percentage of combustible matter varies with the rank of the coal. Each coal bed has its own limits.

Moisture. - The dust should not absorb moisture from the air to such an extent as to cake and destroy its effectiveness as a dry dust.

3/ Rice, G. S., Sayers, R. R., and Harrington, D., Rock-Dusting in Coal Mines: Bureau of Mines Inf. Circ. 6030, 1927, 3 pp.