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SUBJECT: Rock Dust Composition, 30 C.F.R. § 75.2

Scope

This Program Information Bulletin (PIB) applies to operators of underground bituminous coal mines, miners' representatives, Mine Safety and Health Administration (MSHA) enforcement personnel, and other interested parties including rock dust manufacturers.

Purpose

The purpose of this PIB is to alert coal mine operators and rock dust manufacturers of a possible problem with rock dust meeting the definition in 30 C.F.R. § 75.2 regarding particle size and tendency to form a cake.

Information

MSHA's existing definition of "Rock dust" at 30 C.F.R. § 75.2 states:

Pulverized limestone, dolomite, gypsum, anhydrite, shale, adobe, or other inert material, preferably light colored, 100 percent of which will pass through a sieve having 20 meshes per linear inch and 70 percent or more of which will pass through a sieve having 200 meshes per linear inch; the particles of which when wetted and dried will not cohere to form a cake which will not be dispersed into separate particles by a light blast of air; and which does not contain more than 5 percent combustible matter or more than a total of 4 percent free and combined silica (SiO₂), or, where the Secretary finds that such silica concentrations are not available, which does not contain more than 5 percent of free and combined silica.

Underground coal mining methods produce fugitive coal dust which is deposited throughout the underground mine. Application of rock dust is one of the means of preventing propagation of coal dust explosions. Sufficient application of rock dust throughout a mine is required by MSHA to achieve an inert dust mixture. The National Institute for Occupational Safety and Health (NIOSH) recently released updated recommendations (RI 9679) for maintaining a minimum of 80 percent incombustible content of dusts in all areas of underground coal mines through the addition of inert pulverized rock dust. MSHA adopted these recommendations in June 2011, in its standard addressing "Maintenance of Incombustible Content of Rock Dust in Underground Coal Mines," 30 C.F.R. § 75.403. Rock dust must meet the definition of 30 C.F.R. § 75.2.

In October 2011, NIOSH issued a Hazard ID which states, in part, that: "In September 2011, the NIOSH Office of Mine Safety and Health Research investigation of rock dust revealed two significant concerns with the supply of rock dust to US mines:

1. Insufficient particles <200 mesh (75 μm): In a population of 393 rock dust samples which were collected by MSHA personnel from 278 underground coal mines, 47% were found to contain less than the minimum specification of 70% passing through a 200-mesh (75 μm) sieve. Noncompliant rock dust was found at 51% of the mines sampled.
2. Tendency to form a cake: Examinations of the tendency of the rock dust samples to cake when wetted and subsequently dried revealed that all ten of the examined samples formed cakes and were not easily dispersed with the subjective requirement of *a light blast of air*. The rock dust samples NIOSH analyzed contained very fine (<10- μm) particles. Fine particles enhance the caking potential of rock dust when wetted."

These two issues indicate a possible lack of product quality control during the manufacturing process of rock dust that is intended for use by mine operators.

It should be noted that the Low Temperature Ashing procedure used by MSHA to determine the incombustible content of coal dust samples is insensitive to both oversized and caked particles. Therefore, the mine operator may be applying sufficient rock dust to achieve an 80 percent or greater incombustible content, as confirmed by a Low Temperature Ashing Test, but if the rock dust purchased by the operator does not conform to 30 C.F.R. § 75.2, the mixture may not prevent a coal dust explosion from propagating.

Action

The NIOSH Hazard ID contains two recommendations that MSHA believes are important for mine operators, miners' representatives, and manufacturers to know. NIOSH recommends that operators:

1. Test their supply of rock dust upon receipt to assure that it meets the requirements of the 30 C.F.R. § 75.2. Rock dust that does not meet the requirements must not be used in the mine.
2. Obtain documented assurance, based on testing from the rock dust manufacturer, that rock dust intended for use in underground coal mines meets the requirements of 30 C.F.R. § 75.2.

MSHA inspectors will check whether operators are following these recommendations, and have manufacturers' documentation, to assure compliance with 30 C.F.R. § 75.2. MSHA will continue to work with NIOSH to examine the issues associated with the use of rock dust for explosion prevention.

Background

The application of rock dust in underground mines is one of the safety measures that helps prevent, limit, and mitigate fires and explosion in underground coal mines. Other safety measures include the use of proper ventilation, water sprays, methane monitoring, use of permissible equipment, and cleanup and removal of accumulations of coal and float coal dust, loose coal, and other combustibles.

Authority

The Federal Mine Safety and Health Act of 1977, 30 U.S.C. § 801 et seq.;
30 C.F.R. § 75.2

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Internet Availability

This PIB may be viewed on the internet by accessing MSHA's home page at <http://www.msha.gov> and then choosing "Compliance Info and Program Information Bulletins."

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