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Subpart A—General

§ 56.1 Purpose and scope.

This part 56 sets forth mandatory safety and health standards for each surface metal or nonmetal mine, including open pit mines, subject to the Federal Mine Safety and Health Act of 1977. The purpose of these standards is the protection of life, the promotion of health and safety, and the prevention of accidents.

§ 56.2 Definitions.

The following definitions apply in this part. In addition definitions contained in any subpart of part 56 apply in that subpart. If inconsistent with the general definitions in this section, the definition in the subpart will apply in that subpart:

American Table of Distances means the current edition of ''The American Table of Distances for Storage of Explosives'' published by the Institute of Makers of Explosives.

Approved means tested and accepted for a specific purpose by a nationally recognized agency.

Attended means presence of an individual or continuous monitoring to prevent unauthorized entry or access.

Authorized person means a person approved or assigned by mine management to perform a specific type of duty or duties or to be at a specific location or locations in the mine.

Barricaded means obstructed to prevent the passage of persons, vehicles, or flying materials.

Barrier means a material object, or objects that separates, keeps apart, or demarcates in a conspicuous manner such as cones, a warning sign, or tape.

Berm means a pile or mound of material along an elevated roadway capable of moderating or limiting the force of a vehicle in order to impede the vehicle's passage over the bank of the roadway.

Blast area means the area in which concussion (shock wave), flying material, or gases from an explosion may cause injury to persons. In determining the blast area, the following factors shall be considered:

(1) Geology or material to be blasted.

(2) Blast pattern.

(3) Burden, depth, diameter, and angle of the holes.

(4) Blasting experience of the mine.

(5) Delay system, powder factor, and pounds per delay.

(6) Type and amount of explosive material.

(7) Type and amount of stemming.

Blast site means the area where explosive material is handled during loading, including the perimeter formed by the loaded blastholes and 50 feet (15.2 meters) in all directions from loaded holes. A minimum distance of 30 feet (9.1 meters) may replace the 50-foot (15.2-meter) requirement if the perimeter of loaded holes is demarcated with a barrier. The 50-foot (15.2-meter) and alternative 30-foot (9.1-meter) requirement also apply in all directions along the full depth of the hole.

Blasting agent means any substance classified as a blasting agent by the Department of Transportation in 49 CFR 173.114(a) (44 FR 31182, May 31, 1979) which is incorporated by reference. This document is available for inspection at each Metal and Nonmetal Safety and Health District Office of the Mine Safety and Health Administration, and may be obtained from the U.S. Government Printing Office, Washington, DC 20402.

Blasting area means the area near the blasting operations in which concussion or flying material can reasonably be expected to cause injury.

Blasting cap means a detonator which is initiated by a safety fuse.

Blasting circuit means the electrical circuit used to fire one or more electric blasting caps.

Blasting switch means a switch used to connect a power source to a blasting circuit.

Booster means any unit of explosive or blasting agent used for the purpose of perpetuating or intensifying an initial detonation.

Capped fuse means a length of safety fuse to which a blasting cap has been attached.

Capped primer means a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.

Circuit breaker means a device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent setting without injury to itself when properly applied within its rating.

Combustible means capable of being ignited and consumed by fire.

Combustible liquids means liquids having a flash point at or above 100 °F (37.8 °C). They are divided into the following classes:

(1) Class II liquids—those having flash points at or above 100 °F (37.8 °C) and below 140 °F (60 °C).

(2) Class IIIA liquids—those having flash points at or above 140 °F (60 °C) and below 200 °F (93.4 °C).

(3) Class IIIB liquids—those having flash points at or above 200 °F (93.4 °C).

Combustible material means a material that, in the form in which it is used and under the conditions anticipated, will ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Wood, paper, rubber, and plastics are examples of combustible materials.

Company official means a member of the company supervisory or technical staff.

Competent person means a person having abilities and experience that fully qualify him to perform the duty to which he is assigned.

Conductor means a material, usually in the form of a wire, cable, or bus bar, capable of carrying an electric current.

Delay connector means a non-electric short interval delay device for use in delaying blasts which are initiated by detonating cord.

Detonating cord means a flexible cord containing a solid core of high explosives.

Detonator means any device containing a detonating charge that is used to initiate an explosive and includes but is not limited to blasting caps, electric blasting caps and nonelectric instantaneous or delay blasting caps.

Distribution box means a portable apparatus with an enclosure through which an electric circuit is carried to one or more cables from a single incoming feed line, each cable circuit being connected through individual overcurrent protective devices.

Electric blasting cap means a detonator designed for and capable of being initiated by means of an electric current.

Electrical grounding means to connect with the ground to make the earth part of the circuit.

Employee means a person who works for wages or salary in the service of an employer.

Employer means a person or organization which hires one or more persons to work for wages or salary.

Emulsion means an explosive material containing substantial amounts of oxidizers dissolved in water droplets, surrounded by an immiscible fuel.

Explosive means any substance classified as an explosive by the Department of Transportation in 49 CFR 173.53, 173.88, and 173.100 which are incorporated by reference. Title 49 CFR is available for inspection at each Metal and Nonmetal Safety and Health district office of the Mine Safety and Health Administration, and may be obtained from the U.S. Government Printing Office, Washington, DC 20402.

Explosive material means explosives, blasting agents, and detonators.

Face or bank means that part of any mine where excavating is progressing or was last done.

Fire resistance rating means the time, in minutes or hours, that an assembly of materials will retain its protective characteristics or structural integrity upon exposure to fire.

Flammable means capable of being easily ignited and of burning rapidly.

Flammable gas means a gas that will burn in the normal concentrations of oxygen in the air.

Flammable liquid means a liquid that has a flash point below 100 °F (37.8 °C),

a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100 °F (37.8 °C), and is known as a Class I liquid.

Flash point means the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.

High potential means more than 650 volts.

Highway means any public street, public alley, or public road.

Hoist means a power driven windlass or drum used for raising ore, rock, or other material from a mine, and for lowering or raising persons and material.

Igniter cord means a fuse, cordlike in appearance, which burns progressively along its length with an external flame at the zone of burning, and is used for lighting a series of safety fuses in the desired sequence.

Insulated means separated from other conducting surfaces by a dielectric substance permanently offering a high resistance to the passage of current and to disruptive discharge through the substance. When any substance is said to be insulated, it is understood to be insulated in a manner suitable for the conditions to which it is subjected. Otherwise, it is, within the purpose of this definition, uninsulated. Insulating covering is one means for making the conductor insulated.

Insulation means a dielectric substance offering a high resistance to the passage of current and to a disruptive discharge through the substance.

Laminated partition means a partition composed of the following material and minimum nominal dimensions: ½-inch-thick plywood, ½-inch-thick gypsum wallboard, ⅛-inch-thick low carbon steel, and ¼-inch-thick plywood, bonded together in that order (IME–22 Box). A laminated partition also includes alternative construction materials described in the Institute of Makers of Explosives (IME) Safety Library Publication No. 22, ''Recommendations for the Safe Transportation of Detonators in a Vehicle with Other Explosive Materials'' (May 1993), and the ''Generic Loading Guide for the IME–22 Container'' (October 1993). The IME is located at 1120 19th Street NW., Suite 310, Washington, DC 20036–3605; 202–429–9280; *https://www.ime.org*. This incorporation by reference has been approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies are available at MSHA's Office of Standards, Regulations, and Variances, 201 12th Street South, Arlington, VA 22202–5452; 202–693–9440; and at all Metal and Nonmetal Mine Safety and Health District Offices, or available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

Lay means the distance parallel to the axis of the rope in which a strand makes one complete turn about the axis of the rope.

Loading means placing explosive material either in a blasthole or against the material to be blasted.

Low potential means 650 volts or less.

Magazine means a facility for the storage of explosives, blasting agents, or detonators.

Major electrical installation means an assemblage of stationary electrical equipment for the generation, transmission, distribution, or conversion of electrical power.

Mantrip means a trip on which persons are transported to and from a work area.

Mill includes any ore mill, sampling works, concentrator, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.

Misfire means the complete or partial failure of a blasting charge to explode as planned.

Mobile equipment means wheeled, skid-mounted, track-mounted, or rail-mounted equipment capable of moving or being moved.

Multipurpose dry-chemical fire extinguisher means an extinguisher having a rating of at least 2–A:10–B:C and containing a nominal 4.5 pounds or more of dry-chemical agent.

Noncombustible material means a material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support

combustion, or release flammable vapors when subjected to fire or heat. Concrete, masonry block, brick, and steel are examples of noncombustible materials.

Non-electric delay blasting cap means a detonator with an integral delay element and capable of being initiated by miniaturized detonating cord.

Overburden means material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials or ores that are to be mined.

Overload means that current which will cause an excessive or dangerous temperature in the conductor or conductor insulation.

Permissible means a machine, material, apparatus, or device that has been investigated, tested, and approved by the Bureau of Mines or the Mine Safety and Health Administration and is maintained in permissible condition.

Potable water means water which shall meet the applicable minimum health requirements for drinking water established by the State or community in which the mine is located or by the Environmental Protection Agency in 40 CFR part 141, pages 169–182 revised as of July 1, 1977. Where no such requirements are applicable, the drinking water provided shall conform with the Public Health Service Drinking Water Standards, 42 CFR part 72, subpart J, pages 527–533, revised as of October 1, 1976. Publications to which references are made in this definition are hereby made a part hereof. These incorporated publications are available for inspection at each Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration.

Powder chest means a substantial, nonconductive portable container equipped with a lid and used at blasting sites for explosives other than blasting agents.

Primer means a unit, package, or cartridge of explosives used to initiate other explosives or blasting agents, and which contains a detonator.

Reverse-current protection means a method or device used on direct-current circuits or equipment to prevent the flow of current in the reverse direction.

Rock fixture means any tensioned or nontensioned device or material inserted into the ground to strengthen or support the ground.

Roll protection means a framework, safety canopy or similar protection for the operator when equipment overturns.

Safety can means an approved container, of not over five gallons capacity, having a spring-closing lid and spout cover.

Safety fuse means a flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate for the purpose of firing blasting caps or a black powder charge.

Safety switch means a sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

Scaling means removal of insecure material from a face or highwall.

Secondary safety connection means a second connection between a conveyance and rope, intended to prevent the conveyance from running away or falling in the event the primary connection fails.

Shaft means a vertical or inclined shaft, a slope, incline or winze.

Short circuit means an abnormal connection of relatively low resistance, whether made accidentally or intentionally, between two points of different potential in a circuit.

Slurry (as applied to blasting). See ''Water gel.''

Storage facility means the entire class of structures used to store explosive materials. A ''storage facility'' used to store blasting agents corresponds to a BATF Type 4 or 5 storage facility.

Storage tank means a container exceeding 60 gallons in capacity used for the storage of flammable or combustible liquids.

Stray current means that portion of a total electric current that flows through paths other than the intended circuit.

Substantial construction means construction of such strength, material, and workmanship that the object will withstand all reasonable shock, wear, and usage, to which it will be subjected.

Suitable means that which fits, and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

Travelway means a passage, walk or way regularly used and designated for persons to go from one place to another.

Water gel or *Slurry* (as applied to blasting) means an explosive or blasting agent containing substantial portions of water.

Wet drilling means the continuous application of water through the central hole of hollow drill steel to the bottom of the drill hole.

Working place means any place in or about a mine where work is being performed.

[69 FR 38837, June 29, 2004, as amended at 80 FR 52986, Sept. 2, 2015]

PROCEDURES

§ 56.1000 Notification of commencement of operations and closing of mines.

The owner, operator, or person in charge of any metal and nonmetal mine shall notify the nearest MSHA Metal and Nonmetal Mine Safety and Health district office before starting operations, of the approximate or actual date mine operation will commence. The notification shall include the mine name, location, the company name, mailing address, person in charge, and whether operations will be continuous or intermittent.

When any mine is closed, the person in charge shall notify the nearest district office as provided above and indicate whether the closure is temporary or permanent.

[50 FR 4054, Jan. 29, 1985, as amended at 60 FR 33723, June 29, 1995; 60 FR 35695, July 11, 1995; 71 FR 16667, Apr. 3, 2006]

Subpart B—Ground Control

AUTHORITY: 30 U.S.C. 811

SOURCE: 51 FR 36197, Oct. 8, 1986, unless otherwise noted.

§ 56.3000 Definitions.

The following definitions apply in this subpart.

Travelway. A passage, walk, or way regularly used or designated for persons to go from one place to another.

[51 FR 36197, Oct. 8, 1986, as amended at 69 FR 38840, June 29, 2004]

MINING METHODS

§ 56.3130 Wall, bank, and slope stability.

Mining methods shall be used that will maintain wall, bank, and slope stability in places where persons work or travel in performing their assigned tasks. When benching is necessary, the width and height shall be based on the type of equipment used for cleaning of benches or for scaling of walls, banks, and slopes.

§ 56.3131 Pit or quarry wall perimeter.

In places where persons work or travel in performing their assigned tasks, loose or unconsolidated material shall be sloped to the angle of repose or stripped back for at least 10 feet from the top of the pit or quarry wall. Other conditions at or near the perimeter of the pit or quarry wall which create a fall-of-material hazard to persons shall be corrected.

SCALING AND SUPPORT

§ 56.3200 Correction of hazardous conditions.

Ground conditions that create a hazard to persons shall be taken down or supported before other work or travel is permitted in the affected area. Until corrective work is completed, the area shall be posted with a warning against entry and, when left unattended, a barrier shall be installed to impede unauthorized entry.

§ 56.3201 Location for performing scaling.

Scaling shall be performed from a location which will not expose persons to injury from falling material, or other protection from falling material shall be provided.

§ 56.3202 Scaling tools.

Where manual scaling is performed, a scaling bar shall be provided. This bar shall be of a length and design that will allow the removal of loose material

without exposing the person performing this work to injury.

§ 56.3203 Rock fixtures.

(a) For rock bolts and accessories addressed in ASTM F432–95, ''Standard Specification for Roof and Rock Bolts and Accessories,'' the mine operator shall—

(1) Obtain a manufacturer's certification that the material was manufactured and tested in accordance with the specifications of ASTM F432–95; and

(2) Make this certification available to an authorized representative of the Secretary and to the representative of miners.

(b) Fixtures and accessories not addressed in ASTM F432–95 may be used for ground support provided they—

(1) Have been successful in supporting the ground in an area with similar strata, opening dimensions and ground stresses in any mine; or

(2) Have been tested and shown to be effective in supporting ground in an area of the affected mine which has similar strata, opening dimensions, and ground stresses as the area where the fixtures are expected to be used. During the test process, access to the test area shall be limited to persons necessary to conduct the test.

(c) Bearing plates shall be used with fixtures when necessary for effective ground support.

(d) The diameter of finishing bits shall be within a tolerance of plus or minus 0.030 inch of the manufacturer's recommended hole diameter for the anchor used. When separate finishing bits are used, they shall be distinguishable from other bits.

(e) Damaged or deteriorated cartridges of grouting material shall not be used.

(f) When rock bolts tensioned by torquing are used as a means of ground support,

(1) Selected tension level shall be—

(i) At least 50 percent of either the yield point of the bolt or anchorage capacity of the rock, whichever is less; and

(ii) No greater than the yield point of the bolt or anchorage capacity of the rock.

(2) The torque of the first bolt, every tenth bolt, and the last bolt installed in each work area during the shift shall be accurately determined immediately after installation. If the torque of any fixture tested does not fall within the installation torque range, corrective action shall be taken.

(g) When grouted fixtures can be tested by applying torque, the first fixture installed in each work place shall be tested to withstand 150 foot-pounds of torque. Should it rotate in the hole, a second fixture shall be tested in the same manner. If the second fixture also turns, corrective action shall be taken.

(h) When other tensioned and nontensioned fixtures are used, test methods shall be established to verify their effectiveness.

(i) The mine operator shall certify that tests were conducted and make the certification available to an authorized representative of the Secretary.

[51 FR 36197, Oct. 8, 1986, as amended at 51 FR 36804, Oct. 16, 1986; 63 FR 20030, Apr. 22, 1998]

PRECAUTIONS

§ 56.3400 Secondary breakage.

Prior to secondary breakage operations, material to be broken, other than hanging material, shall be positioned or blocked to prevent movement which would endanger persons in the work area. Secondary breakage shall be performed from a location which would not expose persons to danger.

§ 56.3401 Examination of ground conditions.

Persons experienced in examining and testing for loose ground shall be designated by the mine operator. Appropriate supervisors or other designated persons shall examine and, where applicable, test ground conditions in areas where work is to be performed prior to work commencing, after blasting, and as ground conditions warrant during the work shift. Highwalls and banks adjoining travelways shall be examined weekly or more often if changing ground conditions warrant.

§ 56.3430 Activity between machinery or equipment and the highwall or bank.

Persons shall not work or travel between machinery or equipment and the highwall or bank where the machinery or equipment may hinder escape from falls or slides of the highwall or bank. Travel is permitted when necessary for persons to dismount.

Subpart C—Fire Prevention and Control

AUTHORITY: Sec. 101, Federal Mine Safety and Health Act of 1977, Pub. L. 91–173, as amended by Pub. L. 95–164, 91 Stat. 1291 (30 U.S.C. 811).

§ 56.4000 Definitions.

The following definitions apply in this subpart.

Flash point. The minimum temperature at which sufficient vapor is released by a liquid to form a flammable vapor-air mixture near the surface of the liquid.

Safety can. A container of not over five gallons capacity that is designed to safely relieve internal pressure when exposed to heat and has a spring-closing lid and spout cover.

[50 FR 4054, Jan. 29, 1985, as amended at 68 FR 32361, May 30, 2003; 69 FR 38840, June 29, 2004]

§ 56.4011 Abandoned electric circuits.

Abandoned electric circuits shall be deenergized and isolated so that they cannot become energized inadvertently.

PROHIBITIONS/PRECAUTIONS/ HOUSEKEEPING

§ 56.4100 Smoking and use of open flames.

No person shall smoke or use an open flame where flammable or combustible liquids, including greases, or flammable gases are—

(a) Used or transported in a manner that could create a fire hazard; or

(b) Stored or handled.

§ 56.4101 Warning signs.

Readily visible signs prohibiting smoking and open flames shall be posted where a fire or explosion hazard exists.

§ 56.4102 Spillage and leakage.

Flammable or combustible liquid spillage or leakage shall be removed in a timely manner or controlled to prevent a fire hazard.

§ 56.4103 Fueling internal combustion engines.

Internal combustion engines shall be switched off before refueling if the fuel tanks are integral parts of the equipment. This standard does not apply to diesel-powered equipment.

§ 56.4104 Combustible waste.

(a) Waste materials, including liquids, shall not accumulate in quantities that could create a fire hazard.

(b) Until disposed of properly, waste or rags containing flammable or combustible liquids that could create a fire hazard shall be placed in covered metal containers or other equivalent containers with flame containment characteristics.

§ 56.4130 Electric substations and liquid storage facilities.

(a) If a hazard to persons could be created, no combustible materials shall be stored or allowed to accumulate within 25 feet of the following:

(1) Electric substations.

(2) Unburied, flammable or combustible liquid storage tanks.

(3) Any group of containers used for storage of more than 60 gallons of flammable or combustible liquids.

(b) The area within the 25-foot perimeter shall be kept free of dry vegetation.

FIREFIGHTING EQUIPMENT

§ 56.4200 General requirements.

(a) For fighting fires that could endanger persons, each mine shall have—

(1) Onsite firefighting equipment for fighting fires in their early stages; and

(2) Onsite firefighting equipment for fighting fires beyond their early stages, or the mine shall have made prior arrangements with a local fire department to fight such fires.

(b) This onsite firefighting equipment shall be—

(1) Of the type, size, and quantity that can extinguish fires of any class which could occur as a result of the hazards present; and

(2) Strategically located, readily accessible, plainly marked, and maintained in fire-ready condition.

[50 FR 4054, Jan. 29, 1985, as amended at 50 FR 20100, May 14, 1985]

§ 56.4201 Inspection.

(a) Firefighting equipment shall be inspected according to the following schedules:

(1) Fire extinguishers shall be inspected visually at least once a month to determine that they are fully charged and operable.

(2) At least once every twelve months, maintenance checks shall be made of mechanical parts, the amount and condition of extinguishing agent and expellant, and the condition of the hose, nozzle, and vessel to determine that the fire extinguishers will operate effectively.

(3) Fire extinguishers shall be hydrostatically tested according to Table C–1 or a schedule based on the manufacturer's specifications to determine the integrity of extinguishing agent vessels.

(4) Water pipes, valves, outlets, hydrants, and hoses that are part of the mine's firefighting system shall be visually inspected at least once every three months for damage or deterioration and use-tested at least once every twelve months to determine that they remain functional.

(5) Fire suppression systems shall be inspected at least once every twelve months. An inspection schedule based on the manufacturer's specifications or the equivalent shall be established for individual components of a system and followed to determine that the system remains functional. Surface fire suppression systems are exempt from these inspection requirements if the systems are used solely for the protection of property and no persons would be affected by a fire.

(b) At the completion of each inspection or test required by this standard, the person making the inspection or test shall certify that the inspection or test has been made and the date on which it was made. Certifications of hydrostatic testing shall be retained until the fire extinguisher is retested or permanently removed from service. Other certifications shall be retained for one year.

TABLE C–1—HYDROSTATIC TEST INTERVALS FOR FIRE EXTINGUISHERS

Extinguisher type	Test interval (years)
Soda Acid	5
Cartridge-Operated Water and/or Antifreeze	5
Stored-Pressure Water and/or Antifreeze	5
Wetting Agent	5
Foam	5
AFFF (Aqueous Film Forming Foam)	5
Loaded Stream	5
Dry-Chemical with Stainless Steel Shells	5
Carbon Dioxide	5
Dry-Chemical, Stored Pressure, with Mild Steel Shells, Brazed Brass Shells, or Aluminum Shells	12
Dry-Chemical, Cartridge or Cylinder Operated, with Mild Steel Shells	12
Bromotrifluoromethane—Halon 1301	12
Bromochlorodifluoromethane—Halon 1211	12
Dry-Powder, Cartridge or Cylinder-Operated, with Mild Steel Shells[1]	12

[1] Except for stainless steel and steel used for compressed gas cylinders, all other steel shells are defined as "mild steel" shells.

§ 56.4202 Fire hydrants.

If fire hydrants are part of the mine's firefighting system, the hydrants shall be provided with—

(a) Uniform fittings or readily available adapters for onsite firefighting equipment;

(b) Readily available wrenches or keys to open the valves; and

(c) Readily available adapters capable of connecting hydrant fittings to the hose equipment of any firefighting organization relied upon by the mine.

§ 56.4203 Extinguisher recharging or replacement.

Fire extinguishers shall be recharged or replaced with a fully charged extinguisher promptly after any discharge.

§ 56.4230 Self-propelled equipment.

(a)(1) Whenever a fire or its effects could impede escape from self-propelled equipment, a fire extinguisher shall be on the equipment.

(2) Whenever a fire or its effects would not impede escape from the equipment but could affect the escape

of other persons in the area, a fire extinguisher shall be on the equipment or within 100 feet of the equipment.

(b) A fire suppression system may be used as an alternative to fire extinguishers if the system can be manually activated.

(c) Fire extinguishers or fire suppression systems shall be of a type and size that can extinguish fires of any class in their early stages which could originate from the equipment's inherent fire hazards. Fire extinguishers or manual actuators for the suppression system shall be located to permit their use by persons whose escape could be impeded by fire.

FIREFIGHTING PROCEDURES/ALARMS/DRILLS

§ 56.4330 Firefighting, evacuation, and rescue procedures.

(a) Mine operators shall establish emergency firefighting, evacuation, and rescue procedures. These procedures shall be coordinated in advance with available firefighting organizations.

(b) Fire alarm procedures or systems shall be established to promptly warn every person who could be endangered by a fire.

(c) Fire alarm systems shall be maintained in operable condition.

§ 56.4331 Firefighting drills.

Emergency firefighting drills shall be held at least once every six months for persons assigned firefighting responsibilities by the mine operator.

FLAMMABLE AND COMBUSTIBLE LIQUIDS AND GASES

§ 56.4400 Use restrictions.

(a) Flammable liquids shall not be used for cleaning.

(b) Solvents shall not be used near an open flame or other ignition source, near any source of heat, or in an atmosphere that can elevate the temperature of the solvent above the flash point.

§ 56.4401 Storage tank foundations.

Fixed, unburied, flammable or combustible liquid storage tanks shall be securely mounted on firm foundations. Piping shall be provided with flexible connections or other special fittings where necessary to prevent leaks caused by tanks settling.

§ 56.4402 Safety can use.

Small quantities of flammable liquids drawn from storage shall be kept in safety cans labeled to indicate the contents.

§ 56.4430 Storage facilities.

(a) Storage tanks for flammable or combustible liquids shall be—

(1) Capable of withstanding working pressures and stresses and compatible with the type of liquid stored;

(2) Maintained in a manner that prevents leakage;

(3) Isolated or separated from ignition sources to prevent fire or explosion; and

(4) Vented or otherwise constructed to prevent development of pressure or vacuum as a result of filling, emptying, or atmospheric temperature changes. Vents for storage of Class I, II, or IIIA liquids shall be isolated or separated from ignition sources. These pressure relief requirements do not apply to tanks used for storage of Class IIIB liquids that are larger than 12,000 gallons in capacity.

(b) All piping, valves, and fittings shall be—

(1) Capable of withstanding working pressures and stresses;

(2) Compatible with the type of liquid stored; and

(3) Maintained in a manner that prevents leakage.

(c) Fixed, unburied tanks located where escaping liquid could present a hazard to persons shall be provided with—

(1) Containment for the entire capacity of the largest tank; or

(2) Drainage of a remote impoundment area that does not endanger persons. However, storage of only Class IIIB liquids does not require containment or drainage to remote impoundment.

INSTALLATION/CONSTRUCTION/MAINTENANCE

§ 56.4500 Heat sources.

Heat sources capable of producing combustion shall be separated from combustible materials if a fire hazard could be created.

§ 56.4501 Fuel lines.

Fuel lines shall be equipped with valves capable of stopping the flow of fuel at the source and shall be located and maintained to minimize fire hazards. This standard does not apply to fuel lines on self-propelled equipment.

§ 56.4502 Battery-charging stations.

(a) Battery-charging stations shall be ventilated with a sufficient volume of air to prevent the accumulation of hydrogen gas.

(b) Smoking, use of open flames, or other activities that could create an ignition source shall be prohibited at the battery charging station during battery charging.

(c) Readily visible signs prohibiting smoking or open flames shall be posted at battery-charging stations during battery charging.

§ 56.4503 Conveyor belt slippage.

Belt conveyors within confined areas where evacuation would be restricted in the event of a fire resulting from belt-slippage shall be equipped with a detection system capable of automatically stopping the drive pulley. A person shall attend the belt at the drive pulley when it is necessary to operate the conveyor while temporarily bypassing the automatic function.

§ 56.4530 Exits.

Buildings or structures in which persons work shall have a sufficient number of exits to permit prompt escape in case of fire.

§ 56.4531 Flammable or combustible liquid storage buildings or rooms.

(a) Storage buildings or storage rooms in which flammable or combustible liquids, including grease, are stored and that are within 100 feet of any person's work station shall be ventilated with a sufficient volume of air to prevent the accumulation of flammable vapors.

(b) In addition, the buildings or rooms shall be—

(1) Constructed to meet a fire resistance rating of at least one hour; or

(2) Equipped with an automatic fire suppression system; or

(3) Equipped with an early warning fire detection device that will alert any person who could be endangered by a fire, provided that no person's work station is in the building.

(c) Flammable or combustible liquids in use for day-to-day maintenance and operational activities are not considered in storage under this standard.

WELDING/CUTTING/COMPRESSED GASES

§ 56.4600 Extinguishing equipment.

(a) When welding, cutting, soldering, thawing, or bending—

(1) With an electric arc or with an open flame where an electrically conductive extinguishing agent could create an electrical hazard, a multipurpose dry-chemical fire extinguisher or other extinguisher with at least a 2–A:10–B:C rating shall be at the worksite.

(2) With an open flame in an area where no electrical hazard exists, a multipurpose dry-chemical fire extinguisher or equivalent fire extinguishing equipment for the class of fire hazard present shall be at the worksite.

(b) Use of halogenated fire extinguishing agents to meet the requirements of this standard shall be limited to Halon 1211 ($CBrClF_2$) and Halon 1301 ($CBrF_3$). When these agents are used in confined or unventilated areas, precautions based on the manufacturer's use instructions shall be taken so that the gases produced by thermal decompostion of the agents are not inhaled.

§ 56.4601 Oxygen cylinder storage.

Oxygen cylinders shall not be stored in rooms or areas used or designated for storage of flammable or combustible liquids, including grease.

§ 56.4602 Gauges and regulators.

Gauges and regulators used with oxygen or acetylene cylinders shall be kept clean and free of oil and grease.

§ 56.4603 Closure of valves.

To prevent accidental release of gases from hoses and torches attached to oxygen and acetylene cylinders or to manifold systems, cylinder or manifold system valves shall be closed when—

(a) The cylinders are moved;

(b) The torch and hoses are left unattended; or

(c) The task or series of tasks is completed.

§ 56.4604 Preparation of pipelines or containers.

Before welding, cutting, or applying heat with an open flame to pipelines or containers that have contained flammable or combustible liquids, flammable gases, or explosive solids, the pipelines or containers shall be—

(a) Drained, ventilated, and thoroughly cleaned of any residue;

(b) Vented to prevent pressure buildup during the application of heat; and

(c)(1) Filled with an inert gas or water, where compatible; or

(2) Determined to be free of flammable gases by a flammable gas detection device prior to and at frequent intervals during the application of heat.

APPENDIX I TO SUBPART C OF PART 56—NATIONAL CONSENSUS STANDARDS

Mine operators seeking further information in the area of fire prevention and control may consult the following national consensus standards.

MSHA standard	National consensus standard
§§ 56.4200, 56.4201.	NFPA No. 10—Portable Fire Extinguisher.
	NFPA No. 11—Low Expansion Foam and Combined Agent Systems.
	NFPA No. 11A—High Expansion Foam Systems.
	NFPA No. 12—Carbon Dioxide Extinguishing Systems.
	NFPA No. 12A—Halon 1301 Extinguishing Systems.
	NFPA No. 13—Water Sprinkler Systems.
	NFPA No. 14—Standpipe and Hose Systems.
	NFPA No. 15—Water Spray Fixed Systems.
	NFPA No. 16—Foam Water Spray Systems.
	NFPA No. 17—Dry-Chemical Extinguishing Systems.
	NFPA No. 121—Mobile Surface Mining Equipment.
	NFPA No. 291—Testing and Marketing Hydrants.
	NFPA No. 1962—Care, Use, and Maintenance of Fire Hose, Connections, and Nozzles.
§ 56.4202 ..	NFPA No. 14—Standpipe and Hose Systems.
	NFPA No. 291—Testing and Marketing Hydrants.
§ 56.4203 ..	NFPA No. 10—Portable Fire Extinguishers.
§ 56.4230 ..	NFPA No. 10—Portable Fire Extinguishers.
	NFPA No. 121—Mobile Surface Mining Equipment.

Subpart D—Air Quality and Physical Agents

AIR QUALITY

§ 56.5001 Exposure limits for airborne contaminants.

Except as permitted by § 56.5005—

(a) Except as provided in paragraph (b) of this section, the exposure to airborne contaminants shall not exceed, on the basis of a time weighted average, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists, as set forth and explained in the 1973 edition of the Conference's publication, entitled ''TLV's Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for 1973,'' pages 1 through 54, which are hereby incorporated by reference and made a part hereof. This publication may be obtained from the American Conference of Governmental industrial Hygienists by writing to 1330 Kemper Meadow Drive, Attn: Customer Service, Cincinnati, OH 45240; *http://www.acgih.org''*, or may be examined in any Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration. Excursions above the listed thresholds shall not be of a greater magnitude than is characterized as permissible by the Conference.

(b) *Asbestos standard*—(1) *Definitions.* Asbestos is a generic term for a number of asbestiform hydrated silicates that, when crushed or processed, separate into flexible fibers made up of fibrils.

Asbestos means chrysotile, cummingtonite-grunerite asbestos (amosite), crocidolite, anthophylite asbestos, tremolite asbestos, and actinolite asbestos.

Asbestos fiber means a fiber of asbestos that meets the criteria of a fiber.

Fiber means a particle longer than 5 micrometers (μm) with a length-to-diameter ratio of at least 3-to-1.

(2) *Permissible Exposure Limits (PELs)*—(i) *Full-shift limit.* A miner's personal exposure to asbestos shall not exceed an 8-hour time-weighted average full-shift airborne concentration of 0.1 fiber per cubic centimeter of air (f/cc).

(ii) *Excursion limit.* No miner shall be exposed at any time to airborne concentrations of asbestos in excess of 1 fiber per cubic centimeter of air (f/cc) as averaged over a sampling period of 30 minutes.

(3) *Measurement of airborne asbestos fiber concentration.* Potential asbestos fiber concentration shall be determined by phase contrast microscopy (PCM) using the OSHA Reference Method in OSHA's asbestos standard found in 29 CFR 1910.1001, Appendix A, or a method at least equivalent to that method in identifying a potential asbestos exposure exceeding the 0.1 f/cc full-shift limit or the 1 f/cc excursion limit. When PCM results indicate a potential exposure exceeding the 0.1 f/cc full-shift limit or the 1 f/cc excursion limit, samples shall be further analyzed using transmission electron microscopy according to NIOSH Method 7402 or a method at least equivalent to that method.

(c) Employees shall be withdrawn from areas where there is present an airborne contaminant given a ''C'' designation by the Conference and the concentration exceeds the threshold limit value listed for that contaminant.

[50 FR 4054, Jan. 29, 1985, as amended at 60 FR 35695, July 11, 1995; 71 FR 16667, Apr. 3, 2006; 73 FR 11303, Feb. 29, 2008; 73 FR 66172, Nov. 7, 2008]

§ 56.5002 Exposure monitoring.

Dust, gas, mist, and fume surveys shall be conducted as frequently as necessary to determine the adequacy of control measures.

§ 56.5005 Control of exposure to airborne contaminants.

Control of employee exposure to harmful airborne contaminants shall be, insofar as feasible, by prevention of contamination, removal by exhaust ventilation, or by dilution with uncontaminated air. However, where accepted, engineering control measures have not been developed or when necessary by the nature of work involved (for example, while establishing controls or occasional entry into hazardous atmospheres to perform maintenance or investigation), employees may work for reasonable periods of time in concentrations of airborne contaminants exceeding permissible levels if they are protected by appropriate respiratory protective equipment. Whenever respiratory protective equipment is used a program for selection, maintenance, training, fitting, supervision, cleaning, and use shall meet the following minimum requirements:

(a) Respirators approved by NIOSH under 42 CFR part 84 which are applicable and suitable for the purpose intended shall be furnished and miners shall use the protective equipment in accordance with training and instruction.

(b) A respirator program consistent with the requirements of ANSI Z88.2–1969, published by the American National Standards Institute and entitled ''American National Standards Practices for Respiratory Protection ANSI Z88.2–1969,'' approved August 11, 1969, which is hereby incorporated by reference and made a part hereof. This publication may be obtained from the American National Standards Institute, Inc., 25 W. 43rd Street, 4th Floor, New York, NY 10036; *http://www.ansi.org*'', or may be examined in any Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration.

(c) When respiratory protection is used in atmospheres immediately harmful to life, the presence of at least one other person with backup equipment and rescue capability shall be required in the event of failure of the respiratory equipment.

[50 FR 4054, Jan. 29, 1985, as amended at 60 FR 30400, June 8, 1995; 60 FR 33723, June 29, 1995; 60 FR 35695, July 11, 1995; 71 FR 16667, Apr. 3, 2006]

§ 56.5006 Restricted use of chemicals.

The following chemical substances shall not be used or stored except by competent persons under laboratory conditions approved by a nationally recognized agency acceptable to the Secretary.

(a) Carbon tetrachloride.
(b) Phenol,
(c) 4-Nitrobiphenyl,
(d) Alpha-naphthylamine,
(e) 4,4-Methylene Bis (2-chloroaniline),
(f) Methyl-chloromethyl ether,
(g) 3,3 Dichlorobenzidine,
(h) Bis (chloromethyl) ether,
(i) Beta-napthylamine,
(j) Benzidine,
(k) 4-Aminodiphenyl,
(l) Ethyleneimine,
(m) Beta-propiolactone,
(n) 2-Acetylaminofluorene,
(o) 4-Dimethylaminobenzene, and
(p) N-Nitrosodimethylamine.

Subpart E—Explosives

SOURCE: 61 FR 36795, July 12, 1996, unless otherwise noted.

§ 56.6000 Definitions.

The following definitions apply in this subpart.

Blasting agent. Any substance classified as a blasting agent by the Department of Transportation in 49 CFR 173.114a(a). This document is available at any MSHA Metal and Nonmetal Safety and Health district office.

Detonating cord. A flexible cord containing a center core of high explosives which may be used to initiate other explosives.

Detonator. Any device containing a detonating charge used to initiate an explosive. These devices include electronic detonators, electric or nonelectric instantaneous or delay blasting caps, and delay connectors. The term ''detonator'' does not include detonating cord. Detonators may be either ''Class A'' detonators or ''Class C'' detonators, as classified by the Department of Transportation in 49 CFR 173.53 and 173.100, which is available at any MSHA Metal and Nonmetal Safety and Health district office.

Flash point. The minimum temperature at which sufficient vapor is released by a liquid to form a flammable vapor-air mixture near the surface of the liquid.

Igniter cord. A fuse that burns progressively along its length with an external flame at the zone of burning, used for lighting a series of safety fuses in a desired sequence.

Magazine. A bullet-resistant, theft-resistant, fire-resistant, weather-resistant, ventilated facility for the storage of explosives and detonators (BATF Type 1 or Type 2 facility).

Misfire. The complete or partial failure of explosive material to detonate as planned. The term also is used to describe the explosive material itself that has failed to detonate.

Primer. A unit, package, or cartridge of explosives which contains a detonator and is used to initiate other explosives or blasting agents.

Safety switch. A switch that provides shunt protection in blasting circuits between the blast site and the switch used to connect a power source to the blasting circuit.

Slurry. An explosive material containing substantial portions of a liquid, oxidizers, and fuel, plus a thickener.

Water gel. An explosive material containing substantial portions of water, oxidizers, and fuel, plus a cross-linking agent.

[50 FR 4054, Jan. 29, 1985, as amended at 67 FR 38385, June 4, 2002; 68 FR 32361, May 30, 2003; 69 FR 38840, June 29, 2004; 85 FR 2027, Jan. 14, 2020]

STORAGE

§ 56.6100 Separation of stored explosive material.

(a) Detonators shall not be stored in the same magazine with other explosive material.

(b) When stored in the same magazine, blasting agents shall be separated from explosives, safety fuse, and detonating cord to prevent contamination.

§ 56.6101 Areas around explosive material storage facilities.

(a) Areas surrounding storage facilities for explosive material shall be clear of rubbish, brush, dry grass, and trees for 25 feet in all directions, except that live trees 10 feet or taller need not be removed.

(b) Other combustibles shall not be stored or allowed to accumulate within 50 feet of explosive material. Combustible liquids shall be stored in a manner that ensures drainage will occur

away from the explosive material storage facility in case of tank rupture.

§ 56.6102 Explosive material storage practices.

(a) Explosive material shall be—

(1) Stored in a manner to facilitate use of oldest stocks first;

(2) Stored according to brand and grade in such a manner as to facilitate identification; and

(3) Stacked in a stable manner but not more than 8 feet high.

(b) Explosives and detonators shall be stored in closed nonconductive containers except that nonelectric detonating devices may be stored on nonconductive racks provided the case-insert instructions and the date-plant-shift code are maintained with the product.

§ 56.6130 Explosive material storage facilities.

(a) Detonators and explosives shall be stored in magazines.

(b) Packaged blasting agents shall be stored in a magazine or other facility which is ventilated to prevent dampness and excessive heating, weather-resistant, and locked or attended. Drop trailers do not have to be ventilated if they are currently licensed by the Federal, State, or local authorities for over-the-road use. Facilities other than magazines used to store blasting agents shall contain only blasting agents.

(c) Bulk blasting agents shall be stored in weather-resistant bins or tanks which are locked, attended, or otherwise inaccessible to unauthorized entry.

(d) Facilities, bins or tanks shall be posted with the appropriate United States Department of Transportation placards or other appropriate warning signs that indicate the contents and are visible from each approach.

§ 56.6131 Location of explosive material storage facilities.

(a) Storage facilities for any explosive material shall be—

(1) Located so that the forces generated by a storage facility explosion will not create a hazard to occupants in mine buildings and will not damage dams or electric substations; and

(2) Detached structures located outside the blast area and a sufficient distance from powerlines so that the powerlines, if damaged, would not contact the magazines.

(b) Operators should also be aware of regulations affecting storage facilities in 27 CFR part 55, in particular, 27 CFR 55.218 and 55.220. This document is available at any MSHA Metal and Nonmetal Safety and Health district office.

§ 56.6132 Magazine requirements.

(a) Magazines shall be—

(1) Structurally sound;

(2) Noncombustible or the exterior covered with fire-resistant material;

(3) Bullet resistant;

(4) Made of nonsparking material on the inside;

(5) Ventilated to control dampness and excessive heating within the magazine;

(6) Posted with the appropriate United States Department of Transportation placards or other appropriate warning signs that indicate the contents and are visible from each approach, so located that a bullet passing through any of the signs will not strike the magazine;

(7) Kept clean and dry inside;

(8) Unlighted or lighted by devices that are specifically designed for use in magazines and which do not create a fire or explosion hazard;

(9) Unheated or heated only with devices that do not create a fire or explosion hazard;

(10) Locked when unattended; and

(11) Used exclusively for the storage of explosive material except for essential nonsparking equipment used for the operation of the magazine.

(b) Metal magazines shall be equipped with electrical bonding connections between all conductive portions so the entire structure is at the same electrical potential. Suitable electrical bonding methods include welding, riveting, or the use of securely tightened bolts where individual metal portions are joined. Conductive portions of nonmetal magazines shall be grounded.

(c) Electrical switches and outlets shall be located on the outside of the magazine.

§ 56.6133 Powder chests.

(a) Powder chests (day boxes) shall be—

(1) Structurally sound, weather-resistant, equipped with a lid or cover, and with only nonsparking material on the inside;

(2) Posted with the appropriate United States Department of Transportation placards or other appropriate warning signs that indicate the contents and are visible from each approach;

(3) Located out of the blast area once loading has been completed;

(4) Locked or attended when containing explosive material; and

(5) Emptied at the end of each shift with the contents returned to a magazine or other storage facility, or attended.

(b) Detonators shall be kept in chests separate from explosives or blasting agents, unless separated by 4 inches of hardwood or equivalent, or a laminated partition. When a laminated partition is used, operators must follow the provisions of the Institute of Makers of Explosives (IME) Safety Library Publication No. 22, ''Recommendations for the Safe Transportation of Detonators in a Vehicle with Other Explosive Materials'' (May 1993), and the ''Generic Loading Guide for the IME–22 Container'' (October 1993). The IME is located at 1120 19th Street NW., Suite 310, Washington, DC 20036–3605; 202–429–9280; *https://www.ime.org*. This incorporation by reference has been approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies are available at MSHA's Office of Standards, Regulations, and Variances, 201 12th Street South, Arlington, VA 22202–5452; 202–693–9440; and at all Metal and Nonmetal Mine Safety and Health District Offices, or available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

[50 FR 4054, Jan. 29, 1985, as amended at 67 FR 38385, June 4, 2002; 80 FR 52987, Sept. 2, 2015]

TRANSPORTATION

§ 56.6200 Delivery to storage or blast site areas.

Explosive material shall be transported without undue delay to the storage area or blast site.

§ 56.6201 Separation of transported explosive material.

Detonators shall not be transported on the same vehicle or conveyance with other explosives except as follows:

(a) Detonators in quantities of more than 1000 may be transported in a vehicle or conveyance with explosives or blasting agents provided the detonators are—

(1) Maintained in the original packaging as shipped from the manufacturer; and

(2) Separated from explosives or blasting agents by 4 inches of hardwood or equivalent, or a laminated partition. The hardwood or equivalent shall be fastened to the vehicle or conveyance. When a laminated partition is used, operators must follow the provisions of the Institute of Makers of Explosives (IME) Safety Library Publication No.22, ''Recommendations for the Safe Transportation of Detonators in a Vehicle with Other Explosive Materials'' (May 1993), and the ''Generic Loading Guide for the IME–22 Container'' (October 1993). The IME is located at 1120 19th Street NW., Suite 310, Washington, DC 20036–3605; 202–429–9280; *https://www.ime.org*. This incorporation by reference has been approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies are available at MSHA's Office of Standards, Regulations, and Variances, 201 12th Street South, Arlington, VA 22202–5452; 202–693–9440; and at all Metal and Nonmetal Mine Safety and Health District Offices, or available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

(b) Detonators in quantities of 1000 or fewer may be transported with explosives or blasting agents provided the detonators are—

(1) Kept in closed containers; and

(2) Separated from explosives or blasting agents by 4 inches of hardwood or equivalent, or a laminated partition. The hardwood or equivalent shall be fastened to the vehicle or conveyance. When a laminated partition is used, operators must follow the provisions of IME Safety Library Publication No. 22, ''Recommendations for the Safe Transportation of Detonators in a Vehicle with Other Explosive Materials'' (May 1993), and the ''Generic Loading Guide for the IME–22 Container'' (October 1993). The IME is located at 1120 19th Street NW., Suite 310, Washington, DC 20036–3605; 202–429–9280; *https://www.ime.org*. This incorporation by reference has been approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies are available at MSHA's Office of Standards, Regulations, and Variances, 201 12th Street South, Arlington, VA 22202–5452; 202–693–9440; and at all Metal and Nonmetal Mine Safety and Health District Offices, or available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*.

[50 FR 4054, Jan. 29, 1985, as amended at 67 FR 38385, June 4, 2002; 80 FR 52987, Sept. 2, 2015]

§ 56.6202 Vehicles.

(a) Vehicles containing explosive material shall be—

(1) Maintained in good condition and shall comply with the requirements of subpart M of this part;

(2) Equipped with sides and enclosures higher than the explosive material being transported or have the explosive material secured to a nonconductive pallet;

(3) Equipped with a cargo space that shall contain the explosive material (passenger areas shall not be considered cargo space);

(4) Equipped with at least two multipurpose dry-chemical fire extinguishers or one such extinguisher and an automatic fire suppression system;

(5) Posted with warning signs that indicate the contents and are visible from each approach;

(6) Occupied only by persons necessary for handling the explosive material;

(7) Attended or the cargo compartment locked, except when parked at the blast site and loading is in progress; and

(8) Secured while parked by having—

(i) The brakes set;

(ii) The wheels chocked if movement could occur; and

(iii) The engine shut off unless powering a device being used in the loading operation.

(b) Vehicles containing explosives shall have—

(1) No sparking material exposed in the cargo space; and

(2) Only properly secured nonsparking equipment in the cargo space with the explosives.

(c) Vehicles used for dispensing bulk explosive material shall—

(1) Have no zinc or copper exposed in the cargo space; and

(2) Provide any enclosed screw-type conveyors with protection against internal pressure and frictional heat.

§ 56.6203 Locomotives.

Explosive material shall not be transported on a locomotive. When explosive material is hauled by trolley locomotive, covered, electrically insulated cars shall be used.

§ 56.6204 Hoists.

(a) Before explosive material is transported in hoist conveyances, the hoist operator shall be notified.

(b) Explosive material transported in hoist conveyances shall be placed within a container which prevents shifting of the cargo that could cause detonation of the container by impact or by sparks. The manufacturer's container may be used if secured to a nonconductive pallet. When explosives are transported, they shall be secured so as not to contact any sparking material.

(c) No explosive material shall be transported during a mantrip.

§ 56.6205 Conveying explosives by hand.

Closed, nonconductive containers shall be used to carry explosives and detonators to and from blast sites. Separate containers shall be used for explosives and detonators.

USE

§ 56.6300 Control of blasting operations.

(a) Only persons trained and experienced in the handling and use of explosive material shall direct blasting operations and related activities.

(b) Trainees and inexperienced persons shall work only in the immediate presence of persons trained and experienced in the handling and use of explosive material.

§ 56.6301 Blasthole obstruction check.

Before loading, blastholes shall be checked and, wherever possible, cleared of obstructions.

§ 56.6302 Separation of explosive material.

Explosives and blasting agents shall be kept separated from detonators until loading begins.

§ 56.6303 Initiation preparation.

(a) Primers shall be made up only at the time of use and as close to the blast site as conditions allow.

(b) Primers shall be prepared with the detonator contained securely and completely within the explosive or contained securely and appropriately for its design in the tunnel or cap well.

(c) When using detonating cord to initiate another explosive, a connection shall be prepared with the detonating cord threaded through, attached securely to, or otherwise in contact with the explosive.

§ 56.6304 Primer protection.

(a) Tamping shall not be done directly on a primer.

(b) Rigid cartridges of explosives or blasting agents that are 4 inches (100 millimeters) in diameter or larger shall not be dropped on the primer except where the blasthole contains sufficient depth of water to protect the primer from impact. Slit packages of prill, water gel, or emulsions are not considered rigid cartridges and may be drop loaded.

§ 56.6305 Unused explosive material.

Unused explosive material shall be moved to a protected location as soon as practical after loading operations are completed.

§ 56.6306 Loading, blasting, and security.

(a) When explosive materials or initiating systems are brought to the blast site, the blast site shall be attended; barricaded and posted with warning signs, such as ''Danger,'' ''Explosives,'' or ''Keep Out;'' or flagged against unauthorized entry.

(b) Vehicles and equipment shall not be driven over explosive material or initiating systems in a manner which could contact the material or systems, or create other hazards.

(c) Once loading begins, the only activities permitted within the blast site shall be those activities directly related to the blasting operation and the activities of surveying, stemming, sampling of geology, and reopening of holes, provided that reasonable care is exercised. Haulage activity is permitted near the base of a highwall being loaded or awaiting firing, provided no other haulage access exists.

(d) Loading and blasting shall be conducted in a manner designed to facilitate a continuous process, with the blast fired as soon as possible following the completion of loading. If blasting a loaded round may be delayed for more than 72 hours, the operator shall notify the appropriate MSHA district office.

(e) In electric blasting prior to connecting to the power source, and in nonelectric blasting prior to attaching an initiating device, all persons shall leave the blast area except persons in a blasting shelter or other location that protects them from concussion (shock wave), flying material, and gases.

(f) Before firing a blast—

(1) Ample warning shall be given to allow all persons to be evacuated;

(2) Clear exit routes shall be provided for persons firing the round; and

(3) All access routes to the blast area shall be guarded or barricaded to prevent the passage of persons or vehicles.

(g) Work shall not resume in the blast area until a post-blast examination addressing potential blast-related hazards has been conducted by a person with the ability and experience to perform the examination.

§ 56.6307 Drill stem loading.

Explosive material shall not be loaded into blastholes with drill stem equipment or other devices that could be extracted while containing explosive material. The use of loading hose, collar sleeves, or collar pipes is permitted.

§ 56.6308 Initiation systems.

Initiation systems shall be used in accordance with the manufacturer's instructions.

§ 56.6309 Fuel oil requirements for ANFO.

(a) Liquid hydrocarbon fuels with flash points lower than that of No. 2 diesel oil (125 °F) shall not be used to prepare ammonium nitrate-fuel oil, except that diesel fuels with flash points no lower than 100 °F may be used at ambient air temperatures below 45 °F.

(b) Waste oil, including crankcase oil, shall not be used to prepare ammonium nitrate-fuel oil.

§ 56.6310 Misfire waiting period.

When a misfire is suspected, persons shall not enter the blast area—

(a) For 30 minutes if safety fuse and blasting caps are used;

(b) For 15 minutes if any other type detonators are used; or

(c) For 30 minutes if electronic detonators are used, or for the manufacturer-recommended time, whichever is longer.

[61 FR 36795, July 12, 1996, as amended at 85 FR 2027, Jan. 14, 2020]

§ 56.6311 Handling of misfires.

(a) Faces and muck piles shall be examined for misfires after each blasting operation.

(b) Only work necessary to remove a misfire and protect the safety of miners engaged in the removal shall be permitted in the affected area until the misfire is disposed of in a safe manner.

(c) When a misfire cannot be disposed of safely, each approach to the area affected by the misfire shall be posted with a warning sign at a conspicuous location to prohibit entry, and the condition shall be reported immediately to mine management.

(d) Misfires occurring during the shift shall be reported to mine management not later than the end of the shift.

§ 56.6312 Secondary blasting.

Secondary blasts fired at the same time in the same work area shall be initiated from one source.

Electric Blasting

§ 56.6400 Compatibility of electric detonators.

All electric detonators to be fired in a round shall be from the same manufacturer and shall have similar electrical firing characteristics.

§ 56.6401 Shunting.

Except during testing—

(a) Electric detonators shall be kept shunted until connected to the blasting line or wired into a blasting round;

(b) Wired rounds shall be kept shunted until connected to the blasting line; and

(c) Blasting lines shall be kept shunted until immediately before blasting.

§ 56.6402 Deenergized circuits near detonators.

Electrical distribution circuits within 50 feet of electric detonators at the blast site shall be deenergized. Such circuits need not be deenergized between 25 to 50 feet of the electric detonators if stray current tests, conducted as frequently as necessary, indicate a maximum stray current of less than 0.05 amperes through a 1-ohm resistor as measured at the blast site.

§ 56.6403 Branch circuits.

(a) If electric blasting includes the use of branch circuits, each branch shall be equipped with a safety switch or equivalent method to isolate the circuits to be used.

(b) At least one safety switch or equivalent method of protection shall be located outside the blast area and shall be in the open position until persons are withdrawn.

§ 56.6404 Separation of blasting circuits from power source.

(a) Switches used to connect the power source to a blasting circuit shall be locked in the open position except when closed to fire the blast.

(b) Lead wires shall not be connected to the blasting switch until the shot is ready to be fired.

§ 56.6405 Firing devices.

(a) Power sources shall be capable of delivering sufficient current to energize all electric detonators to be fired with the type of circuits used. Storage or dry cell batteries are not permitted as power sources.

(b) Blasting machines shall be tested, repaired, and maintained in accordance with manufacturer's instructions.

(c) Only the blaster shall have the key or other control to an electrical firing device.

§ 56.6406 Duration of current flow.

If any part of a blast is connected in parallel and is to be initiated from powerlines or lighting circuits, the time of current flow shall be limited to a maximum of 25 milliseconds. This can be accomplished by incorporating an arcing control device in the blasting circuit or by interrupting the circuit with an explosive device attached to one or both lead lines and initiated by a 25-millisecond delay electric detonator.

§ 56.6407 Circuit testing.

A blasting galvanometer or other instrument designed for testing blasting circuits shall be used to test each of the following:

(a) Continuity of each electric or electronic detonator in the blasthole prior to stemming and connection to the blasting line.

(b) Resistance of individual series or the resistance of multiple balanced series to be connected in parallel prior to their connection to the blasting line.

(c) Continuity of blasting lines prior to the connection of electric or electronic detonator series.

(d) Total blasting circuit resistance prior to connection to the power source.

[61 FR 36795, July 12, 1996, as amended at 85 FR 2027, Jan. 14, 2020]

NONELECTRIC BLASTING

§ 56.6500 Damaged initiating material.

A visual check of the completed circuit shall be made to ensure that the components are properly aligned and connected. Safety fuse, igniter cord, detonating cord, shock or gas tubing, and similar material which is kinked, bent sharply, or damaged shall not be used.

§ 56.6501 Nonelectric initiation systems.

(a) When the nonelectric initiation system uses shock tube—

(1) Connections with other initiation devices shall be secured in a manner which provides for uninterrupted propagation;

(2) Factory-made units shall be used as assembled and shall not be cut except that a single splice is permitted on the lead-in trunkline during dry conditions; and

(3) Connections between blastholes shall not be made until immediately prior to clearing the blast site when surface delay detonators are used.

(b) When the nonelectric initiation system uses detonating cord—

(1) The line of detonating cord extending out of a blasthole shall be cut from the supply spool immediately after the attached explosive is correctly positioned in the hole;

(2) In multiple row blasts, the trunkline layout shall be designed so that the detonation can reach each blasthole from at least two directions;

(3) Connections shall be tight and kept at right angles to the trunkline;

(4) Detonators shall be attached securely to the side of the detonating cord and pointed in the direction in which detonation is to proceed;

(5) Connections between blastholes shall not be made until immediately prior to clearing the blast site when surface delay detonators are used; and

(6) Lead-in lines shall be manually unreeled if connected to the trunklines at the blast site.

(c) When the nonelectric initiation system uses gas tube, continuity of the circuit shall be tested prior to blasting.

§ 56.6502 Safety fuse.

(a) The burning rate of each spool of safety fuse to be used shall be measured, posted in locations which will be conspicuous to safety fuse users, and brought to the attention of all persons involved with the blasting operation.

(b) When firing with safety fuse ignited individually using handheld lighters, the safety fuse shall be of lengths which provide at least the minimum burning time for a particular size round, as specified in the following table:

TABLE E–1—SAFETY FUSE—MINIMUM BURNING TIME

Number of holes in a round	Minimum burning time
1	2 min. [1]
2–5	2 min. 40 sec.
6–10	3 min. 20 sec.
11 to 15	5 min.

[1] For example, at least a 36-inch length of 40-second-per-foot safety fuse or at least a 48-inch length of 30-second-per-foot safety fuse would have to be used to allow sufficient time to evacuate the area.

(c) Where flyrock might damage exposed safety fuse, the blast shall be timed so that all safety fuses are burning within the blastholes before any blasthole detonates.

(d) Fuse shall be cut and capped in dry locations.

(e) Blasting caps shall be crimped to fuse only with implements designed for that purpose.

(f) Safety fuse shall be ignited only after the primer and the explosive material are securely in place.

(g) Safety fuse shall be ignited only with devices designed for that purpose. Carbide lights, liquefied petroleum gas torches, and cigarette lighters shall not be used to light safety fuse.

(h) At least two persons shall be present when lighting safety fuse, and no one shall light more than 15 individual fuses. If more than 15 holes per person are to be fired, electric initiation systems, igniter cord and connectors, or other nonelectric initiation systems shall be used.

EXTRANEOUS ELECTRICITY

§ 56.6600 Loading practices.

If extraneous electricity is suspected in an area where electric detonators are used, loading shall be suspended until tests determine that stray current does not exceed 0.05 amperes through a 1-ohm resister when measured at the location of the electric detonators. If greater levels of extraneous electricity are found, the source shall be determined and no loading shall take place until the condition is corrected.

§ 56.6601 Grounding.

Electric blasting circuits, including powerline sources when used, shall not be grounded.

§ 56.6602 Static electricity dissipation during loading.

When explosive material is loaded pneumatically into a blasthole in a manner that generates a static electricity hazard—

(a) An evaluation of the potential static electricity hazard shall be made and any hazard shall be eliminated before loading begins;

(b) The loading hose shall be of a semiconductive type, have a total of not more than 2 megohms of resistance over its entire length and not less than 1000 ohms of resistance per foot;

(c) Wire-countered hoses shall not be used;

(d) Conductive parts of the loading equipment shall be bonded and grounded and grounds shall not be made to other potential sources of extraneous electricity; and

(e) Plastic tubes shall not be used as hole liners if the hole contains an electric detonator.

§ 56.6603 Air gap.

At least a 15-foot air gap shall be provided between the blasting circuit and the electric power source.

§ 56.6604 Precautions during storms.

During the approach and progress of an electrical storm, blasting operations shall be suspended and persons withdrawn from the blast area or to a safe location.

§ 56.6605 Isolation of blasting circuits.

Lead wires and blasting lines shall be isolated and insulated from power conductors, pipelines, and railroad tracks, and shall be protected from sources of stray or static electricity. Blasting circuits shall be protected from any contact between firing lines and overhead powerlines which could result from the force of a blast.

EQUIPMENT/TOOLS

§ 56.6700 Nonsparking tools.

Only nonsparking tools shall be used to open containers of explosive material or to punch holes in explosive cartridges.

§ 56.6701 Tamping and loading pole requirements.

Tamping and loading poles shall be of wood or other nonconductive, nonsparking material. Couplings for poles shall be nonsparking.

MAINTENANCE

§ 56.6800 Storage facilities.

When repair work which could produce a spark or flame is to be performed on a storage facility—

(a) The explosive material shall be moved to another facility, or moved at least 50 feet from the repair activity and monitored; and

(b) The facility shall be cleaned to prevent accidental detonation.

§ 56.6801 Vehicle repair.

Vehicles containing explosive material and oxidizers shall not be taken into a repair garage or shop.

§ 56.6802 Bulk delivery vehicles.

No welding or cutting shall be performed on a bulk delivery vehicle until the vehicle has been washed down and all explosive material has been removed. Before welding or cutting on a hollow shaft, the shaft shall be thoroughly cleaned inside and out and vented with a minimum ½-inch diameter opening to allow for sufficient ventilation.

§ 56.6803 Blasting lines.

Permanent blasting lines shall be properly supported. All blasting lines shall be insulated and kept in good repair.

GENERAL REQUIREMENTS

§ 56.6900 Damaged or deteriorated explosive material.

Damaged or deteriorated explosive material shall be disposed of in a safe manner in accordance with the instructions of the manufacturer.

§ 56.6901 Black powder.

(a) Black powder shall be used for blasting only when a desired result cannot be obtained with another type of explosive, such as in quarrying certain types of dimension stone.

(b) Containers of black powder shall be—

(1) Nonsparking;

(2) Kept in a totally enclosed cargo space while being transported by a vehicle;

(3) Securely closed at all times when—

(i) Within 50 feet of any magazine or open flame;

(ii) Within any building in which a fuel-fired or exposed-element electric heater is operating; or

(iii) In an area where electrical or incandescent-particle sparks could result in powder ignition; and

(4) Opened only when the powder is being transferred to a blasthole or another container and only in locations not listed in paragraph (b)(3) of this section.

(c) Black powder shall be transferred from containers only by pouring.

(d) Spills shall be cleaned up promptly with nonsparking equipment. Contaminated powder shall be put into a container of water and shall be disposed of promptly after the granules have disintegrated, or the spill area shall be flushed promptly with water until the granules have disintegrated completely.

(e) Misfires shall be disposed of by washing the stemming and powder charge from the blasthole, and removing and disposing of the initiator in accordance with the requirement for damaged explosives.

(f) Holes shall not be reloaded for at least 12 hours when the blastholes have failed to break as planned.

§ 56.6902 Excessive temperatures.

(a) Where heat could cause premature detonation, explosive material shall not be loaded into hot areas, such as kilns or sprung holes.

(b) When blasting sulfide ores where hot holes occur that may react with explosive material in blastholes, operators shall—

(1) Measure an appropriate number of blasthole temperatures in order to assess the specific mine conditions prior to the introduction of explosive material;

(2) Limit the time between the completion of loading and the initiation of the blast to no more than 12 hours; and

(3) Take other special precautions to address the specific conditions at the mine to prevent premature detonation.

§ 56.6903 Burning explosive material.

If explosive material is suspected of burning at the blast site, persons shall be evacuated from the endangered area and shall not return for at least one hour after the burning or suspected burning has stopped.

§ 56.6904 Smoking and open flames.

Smoking and use of open flames shall not be permitted within 50 feet of explosive material except when separated by permanent noncombustible barriers. This standard does not apply to devices designed to ignite safety fuse or to heating devices which do not create a fire or explosion hazard.

§ 56.6905 Protection of explosive material.

(a) Explosive material shall be protected from temperatures in excess of 150 degrees Fahrenheit.

(b) Explosive material shall be protected from impact, except for tamping and dropping during loading.

Subpart F—Drilling and Rotary Jet Piercing

DRILLING

§ 56.7002 Equipment defects.

Equipment defects affecting safety shall be corrected before the equipment is used.

§ 56.7003 Drill area inspection.

The drilling area shall be inspected for hazards before starting the drilling operations.

§ 56.7004 Drill mast.

Persons shall not be on a mast while the drill-bit is in operation unless they are provided with a safe platform from which to work and they are required to use safety belts to avoid falling.

§ 56.7005 Augers and drill stems.

Drill crews and others shall stay clear of augers or drill stems that are in motion. Persons shall not pass under or step over a moving stem or auger.

§ 56.7008 Moving the drill.

When a drill is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured and the mast placed in a safe position.

§ 56.7009 Drill helpers.

If a drill helper assists the drill operator during movement of a drill to a new location, the helper shall be in sight of, or in communication with, the operator at all times.

§ 56.7010 Power failures.

In the event of power failure, drill controls shall be placed in the neutral position until power is restored.

§ 56.7011 Straightening crossed cables.

The drill stem shall be resting on the bottom of the hole or on the platform with the stem secured to the mast before attempts are made to straighten a crossed cable on a reel.

§ 56.7012 Tending drills in operation.

While in operation, drills shall be attended at all times.

§ 56.7013 Covering or guarding drill holes.

Drill holes large enough to constitute a hazard shall be covered or guarded.

§ 56.7018 Hand clearance.

Persons shall not hold the drill steel while collaring holes, or rest their hands on the chuck or centralizer while drilling.

§ 56.7050 Tool and drill steel racks.

Receptacles or racks shall be provided for drill steel and tools stored or carried on drills.

§ 56.7051 Loose objects on the mast or drill platform.

To prevent injury to personnel, tools and other objects shall not be left loose on the mast or drill platform.

§ 56.7052 Drilling positions.

Persons shall not drill from—

(a) Positions which hinder their access to the control levers;

(b) Insecure footing or insecure staging; or

(c) Atop equipment not suitable for drilling.

§ 56.7053 Moving hand-held drills.

Before hand-held drills are moved from one working area to another, air shall be turned off and bled from the hose.

§ 56.7055 Intersecting holes.

Holes shall not be drilled where there is a danger of intersecting a misfired hole or a hole containing explosives blasting agents, or detonators.

[56 FR 46508, Sept. 12, 1991]

§ 56.7056 Collaring in bootlegs.

Holes shall not be collared in bootlegs.

[56 FR 46508, Sept. 12, 1991]

ROTARY JET PIERCING

§ 56.7801 Jet drills.

Jet piercing drills shall be provided with—

(a) A system to pressurize the equipment operator's cab, when a cab is provided; and

(b) A protective cover over the oxygen flow indicator.

§ 56.7802 Oxygen hose lines.

Safety chains or other suitable locking devices shall be provided across connections to and between high pressure oxygen hose lines of 1-inch inside diameter or larger.

§ 56.7803 Lighting the burner.

A suitable means of protection shall be provided for the employee when lighting the burner.

§ 56.7804 Refueling.

When rotary jet piercing equipment requires refueling at locations other than fueling stations, a system for fueling without spillage shall be provided.

§ 56.7805 Smoking and open flames.

Persons shall not smoke and open flames shall not be used in the vicinity of the oxygen storage and supply lines. Signs warning against smoking and open flames shall be posted in these areas.

§ 56.7806 Oxygen intake coupling.

The oxygen intake coupling on jet-piercing drills shall be constructed so that only the oxygen hose can be coupled to it.

§ 56.7807 Flushing the combustion chamber.

The combustion chamber of a jet drill stem which has been sitting unoperated in a drill hole shall be flushed with a suitable solvent after the stem is pulled up.

Subpart G [Reserved]

Subpart H—Loading, Hauling, and Dumping

SOURCE: 53 FR 32520, Aug. 25, 1988, unless otherwise noted.

TRAFFIC SAFETY

§ 56.9100 Traffic control.

To provide for the safe movement of self-propelled mobile equipment—

(a) Rules governing speed, right-of-way, direction of movement, and the use of headlights to assure appropriate visibility, shall be established and followed at each mine; and

(b) Signs or signals that warn of hazardous conditions shall be placed at appropriate locations at each mine.

§ 56.9101 Operating speeds and control of equipment.

Operators of self-propelled mobile equipment shall maintain control of the equipment while it is in motion. Operating speeds shall be consistent with conditions of roadways, tracks, grades, clearance, visibility, and traffic, and the type of equipment used.

§ 56.9102 Movement of independently operating rail equipment.

Movement of two or more pieces of rail equipment operating independently on the same track shall be controlled for safe operation.

§ 56.9103 Clearance on adjacent tracks.

Railcars shall not be left on side tracks unless clearance is provided for traffic on adjacent tracks.

§ 56.9104 Railroad crossings.

Designated railroad crossings shall be posted with warning signs or signals, or shall be guarded when trains are passing. These crossings shall also be planked or filled between the rails.

TRANSPORTATION OF PERSONS AND MATERIALS

§ 56.9200 Transporting persons.

Persons shall not be transported—

(a) In or on dippers, forks, clamshells, or buckets except shaft buckets during shaft-sinking operations or during inspection, maintenance and repair of shafts.

(b) In beds of mobile equipment or railcars, unless—

(1) Provisions are made for secure travel, and

(2) Means are taken to prevent accidental unloading if the equipment is provided with unloading devices;

(c) On top of loads in mobile equipment;

(d) Outside cabs, equipment operators' stations, and beds of mobile equipment, except when necessary for maintenance, testing, or training purposes, and provisions are made for secure travel. This provision does not apply to rail equipment.

(e) Between cars of trains, on the leading end of trains, on the leading end of a single railcar, or in other locations on trains that expose persons to hazards from train movement.

(1) This paragraph does not apply to car droppers if they are secured with safety belts and lines which prevent them from falling off the work platform.

(2) Brakemen and trainmen are prohibited from riding between cars of moving trains, but may ride on the leading end of trains or other locations when necessary to perform their duties;

(f) To and from work areas in overcrowded mobile equipment;

(g) In mobile equipment with materials or equipment unless the items are secured or are small and can be carried safely by hand without creating a hazard to persons; or

(h) On conveyors unless the conveyors are designed to provide for their safe transportation.

§ 56.9201 Loading, hauling, and unloading of equipment or supplies.

Equipment and supplies shall be loaded, transported, and unloaded in a manner which does not create a hazard to persons from falling or shifting equipment or supplies.

§ 56.9202 Loading and hauling large rocks.

Large rocks shall be broken before loading if they could endanger persons or affect the stability of mobile equipment. Mobile equipment used for haulage of mined material shall be loaded to minimize spillage where a hazard to persons could be created.

SAFETY DEVICES, PROVISIONS, AND PROCEDURES FOR ROADWAYS, RAILROADS, AND LOADING AND DUMPING SITES

§ 56.9300 Berms or guardrails.

(a) Berms or guardrails shall be provided and maintained on the banks of roadways where a drop-off exists of sufficient grade or depth to cause a vehicle to overturn or endanger persons in equipment.

(b) Berms or guardrails shall be at least mid-axle height of the largest self-propelled mobile equipment which usually travels the roadway.

(c) Berms may have openings to the extent necessary for roadway drainage.

(d) Where elevated roadways are infrequently traveled and used only by service or maintenance vehicles, berms or guardrails are not required when all of the following are met:

(1) Locked gates are installed at the entrance points to the roadway.

(2) Signs are posted warning that the roadway is not bermed.

(3) Delineators are installed along the perimeter of the elevated roadway so that, for both directions of travel, the reflective surfaces of at least three delineators along each elevated shoulder are always visible to the driver and spaced at intervals sufficient to indicate the edges and attitude of the roadway.

(4) A maximum speed limit is posted and observed for the elevated unbermed portions of the roadway. Factors to consider when establishing the maximum speed limit shall include the width, slope and alignment of the road, the type of equipment using the road, the road material, and any hazardous conditions which may exist.

(5) Road surface traction is not impaired by weather conditions, such as sleet and snow, unless corrective measures are taken to improve traction.

(e) This standard is not applicable to rail beds.

[53 FR 32520, Aug. 25, 1988, as amended at 55 FR 37218, Sept. 7, 1990]

§ 56.9301 Dump site restraints.

Berms, bumper blocks, safety hooks, or similar impeding devices shall be provided at dumping locations where there is a hazard of overtravel or overturning.

§ 56.9302 Protection against moving or runaway railroad equipment.

Stopblocks, derail devices, or other devices that protect against moving or runaway rail equipment shall be installed wherever necessary to protect persons.

§ 56.9303 Construction of ramps and dumping facilities.

Ramps and dumping facilities shall be designed and constructed of materials capable of supporting the loads to which they will be subjected. The ramps and dumping facilities shall provide width, clearance, and headroom to safely accommodate the mobile equipment using the facilities.

§ 56.9304 Unstable ground.

(a) Dumping locations shall be visually inspected prior to work commencing and as ground conditions warrant.

(b) Where there is evidence that the ground at a dumping location may fail to support the mobile equipment, loads shall be dumped a safe distance back from the edge of the unstable area of the bank.

§ 56.9305 Truck spotters.

(a) If truck spotters are used, they shall be in the clear while trucks are backing into dumping position or dumping.

(b) Spotters shall use signal lights to direct trucks where visibility is limited.

(c) When a truck operator cannot clearly recognize the spotter's signals, the truck shall be stopped.

§ 56.9306 Warning devices for restricted clearances.

Where restricted clearance creates a hazard to persons on mobile equipment, warning devices shall be installed in advance of the restricted area and the restricted area shall be conspicuously marked.

§ 56.9307 Design, installation, and maintenance of railroads.

Roadbeds and all elements of the railroad tracks shall be designed, installed, and maintained to provide safe operation consistent with the speed and type of haulage used.

§ 56.9308 Switch throws.

Switch throws shall be installed to provide clearance to protect switchmen from contact with moving trains.

§ 56.9309 Chute design.

Chute-loading installations shall be designed to provide a safe location for persons pulling chutes.

§ 56.9310 Chute hazards.

(a) Prior to chute-pulling, persons who could be affected by the draw or otherwise exposed to danger shall be

warned and given time to clear the hazardous area.

(b) Persons attempting to free chute hangups shall be experienced and familiar with the task, know the hazards involved, and use the proper tools to free material.

(c) When broken rock or material is dumped into an empty chute, the chute shall be equipped with a guard or all persons shall be isolated from the hazard of flying rock or material.

§ 56.9311 Anchoring stationary sizing devices.

Grizzlies and other stationary sizing devices shall be securely anchored.

§ 56.9312 Working around drawholes.

Unless platforms or safety lines are used, persons shall not position themselves over drawholes if there is danger that broken rock or material may be withdrawn or bridged.

§ 56.9313 Roadway maintenance.

Water, debris, or spilled material on roadways which creates hazards to the operation of mobile equipment shall be removed.

§ 56.9314 Trimming stockpile and muckpile faces.

Stockpile and muckpile faces shall be trimmed to prevent hazards to persons.

§ 56.9315 Dust control.

Dust shall be controlled at muck piles, material transfer points, crushers, and on haulage roads where hazards to persons would be created as a result of impaired visibility.

§ 56.9316 Notifying the equipment operator.

When an operator of self-propelled mobile equipment is present, persons shall notify the equipment operator before getting on or off that equipment.

§ 56.9317 Suspended loads.

Persons shall not work or pass under the buckets or booms of loaders in operation.

§ 56.9318 Getting on or off moving equipment.

Persons shall not get on or off moving mobile equipment. This provision does not apply to trainmen, brakemen, and car droppers who are required to get on or off slowly moving trains in the performance of their work duties.

§ 56.9319 Going over, under, or between railcars.

Persons shall not go over, under, or between railcars unless:

(a) The train is stopped; and

(b) The train operator, when present, is notified and the notice acknowledged.

§ 56.9330 Clearance for surface equipment.

Continuous clearance of at least 30 inches from the farthest projection of moving railroad equipment shall be provided on at least one side of the tracks at all locations where possible or the area shall be marked conspicuously.

Subpart I—Aerial Tramways

§ 56.10001 Filling buckets.

Buckets shall not be overloaded, and feed shall be regulated to prevent spillage.

§ 56.10002 Inspection and maintenance.

Inspection and maintenance of carriers (including loading and unloading mechanisms), ropes and supports, and brakes shall be performed by competent persons according to the recommendations of the manufacturer.

§ 56.10003 Correction of defects.

Any hazardous defects shall be corrected before the equipment is used.

§ 56.10004 Brakes.

Positive-action-type brakes and devices which apply the brakes automatically in the event of a power failure shall be provided on aerial tramways.

§ 56.10005 Track cable connections.

Track cable connections shall not obstruct the passage of carriage wheels.

§ 56.10006 Tower guards.

Towers shall be suitably protected from swaying buckets.

§ 56.10007 Falling object protection.

Guard nets or other suitable protection shall be provided where tramways pass over roadways, walkways, or buildings.

§ 56.10008 Riding tramways.

Persons other than maintenance persons shall not ride aerial tramways unless the following features are provided:

(a) Two independent brakes, each capable of holding the maximum load;

(b) Direct communication between terminals;

(c) Power drives with emergency power available in case of primary power failure; and

(d) Buckets equipped with positive locks to prevent accidental tripping or dumping.

§ 56.10009 Riding loaded buckets.

Persons shall not ride loaded buckets.

§ 56.10010 Starting precautions.

Where possible, aerial tramways shall not be started until the operator has ascertained that everyone is in the clear.

Subpart J—Travelways

§ 56.11001 Safe access.

Safe means of access shall be provided and maintained to all working places.

§ 56.11002 Handrails and toeboards.

Crossovers, elevated walkways, elevated ramps, and stairways shall be of substantial construction provided with handrails, and maintained in good condition. Where necessary, toeboards shall be provided.

§ 56.11003 Construction and maintenance of ladders.

Ladders shall be of substantial construction and maintained in good condition.

§ 56.11004 Portable rigid ladders.

Portable rigid ladders shall be provided with suitable bases and placed securely when used.

§ 56.11005 Fixed ladder anchorage and toe clearance.

Fixed ladders shall be anchored securely and installed to provide at least 3 inches of toe clearance.

§ 56.11006 Fixed ladder landings.

Fixed ladders shall project at least 3 feet above landings, or substantial handholds shall be provided above the landings.

§ 56.11007 Wooden components of ladders.

Wooden components of ladders shall not be painted except with a transparent finish.

§ 56.11008 Restricted clearance.

Where restricted clearance creates a hazard to persons, the restricted clearance shall be conspicuously marked.

[53 FR 32521, Aug. 25, 1988]

§ 56.11009 Walkways along conveyors.

Walkways with outboard railings shall be provided wherever persons are required to walk alongside elevated conveyor belts. Inclined railed walkways shall be nonskid or provided with cleats.

§ 56.11010 Stairstep clearance.

Vertical clearance above stair steps shall be a minimum of seven feet, or suitable warning signs or similar devices shall be provided to indicate an impaired clearance.

§ 56.11011 Use of ladders.

Persons using ladders shall face the ladders and have both hands free for climbing and descending.

§ 56.11012 Protection for openings around travelways.

Openings above, below, or near travelways through which persons or materials may fall shall be protected by railings, barriers, or covers. Where it is impractical to install such protective devices, adequate warning signals shall be installed.

§ 56.11013 Conveyor crossovers.

Crossovers shall be provided where it is necessary to cross conveyors.

§ 56.11014 Crossing moving conveyors.

Moving conveyors shall be crossed only at designated crossover points.

§ 56.11016 Snow and ice on walkways and travelways.

Regularly used walkways and travelways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

§ 56.11017 Inclined fixed ladders.

Fixed ladders shall not incline backwards.

§ 56.11025 Railed landings, backguards, and other protection for fixed ladders.

Fixed ladders, except on mobile equipment, shall be offset and have substantial railed landings at least every 30 feet unless backguards or equivalent protection, such as safety belts and safety lines, are provided.

§ 56.11026 Protection for inclined fixed ladders.

Fixed ladders 70 degrees to 90 degrees from the horizontal and 30 feet or more in length shall have backguards, cages or equivalent protection, starting at a point not more than seven feet from the bottom of the ladders.

§ 56.11027 Scaffolds and working platforms.

Scaffolds and working platforms shall be of substantial construction and provided with handrails and maintained in good condition. Floor boards shall be laid properly and the scaffolds and working platforms shall not be overloaded. Working platforms shall be provided with toeboards when necessary.

Subpart K—Electricity

§ 56.12001 Circuit overload protection.

Circuits shall be protected against excessive overload by fuses or circuit breakers of the correct type and capacity.

§ 56.12002 Controls and switches.

Electric equipment and circuits shall be provided with switches or other controls. Such switches or controls shall be of approved design and construction and shall be properly installed.

§ 56.12003 Trailing cable overload protection.

Individual overload protection or short circuit protection shall be provided for the trailing cables of mobile equipment.

§ 56.12004 Electrical conductors.

Electrical conductors shall be of a sufficient size and current-carrying capacity to ensure that a rise in temperature resulting from normal operations will not damage the insulating materials. Electrical conductors exposed to mechanical damage shall be protected.

§ 56.12005 Protection of power conductors from mobile equipment.

Mobile equipment shall not run over power conductors, nor shall loads be dragged over power conductors, unless the conductors are properly bridged or protected.

§ 56.12006 Distribution boxes.

Distribution boxes shall be provided with a disconnecting device for each branch circuit. Such disconnecting devices shall be equipped or designed in such a manner that it can be determined by visual observation when such a device is open and that the circuit is deenergized, the distribution box shall be labeled to show which circuit each device controls.

§ 56.12007 Junction box connection procedures.

Trailing cable and power-cable connections to junction boxes shall not be made or broken under load.

§ 56.12008 Insulation and fittings for power wires and cables.

Power wires and cables shall be insulated adequately where they pass into or out of electrical compartments. Cables shall enter metal frames of motors, splice boxes, and electrical compartments only through proper fittings. When insulated wires, other than cables, pass through metal frames, the holes shall be substantially bushed with insulated bushings.

§ 56.12010 Isolation or insulation of communication conductors.

Telephone and low-potential signal wire shall be protected, by isolation or suitable insulation, or both, from contacting energized power conductors or any other power source.

§ 56.12011 High-potential electrical conductors.

High-potential electrical conductors shall be covered, insulated, or placed to prevent contact with low potential conductors.

§ 56.12012 Bare signal wires.

The potential on bare signal wires accessible to contact by persons shall not exceed 48 volts.

§ 56.12013 Splices and repairs of power cables.

Permanent splices and repairs made in power cables, including the ground conductor where provided, shall be:

(a) Mechanically strong with electrical conductivity as near as possible to that of the original;

(b) Insulated to a degree at least equal to that of the original, and sealed to exclude moisture; and

(c) Provided with damage protection as near as possible to that of the original, including good bonding to the outer jacket.

§ 56.12014 Handling energized power cables.

Power cables energized to potentials in excess of 150 volts, phase-to-ground, shall not be moved with equipment unless sleds or slings, insulated from such equipment, are used. When such energized cables are moved manually, insulated hooks, tongs, ropes, or slings shall be used unless suitable protection for persons is provided by other means. This does not prohibit pulling or dragging of cable by the equipment it powers when the cable is physically attached to the equipment by suitable mechanical devices, and the cable is insulated from the equipment in conformance with other standards in this part.

§ 56.12016 Work on electrically-powered equipment.

Electrically powered equipment shall be deenergized before mechanical work is done on such equipment. Power switches shall be locked out or other measures taken which shall prevent the equipment from being energized without the knowledge of the individuals working on it. Suitable warning notices shall be posted at the power switch and signed by the individuals who are to do the work. Such locks or preventive devices shall be removed only by the persons who installed them or by authorized personnel.

§ 56.12017 Work on power circuits.

Power circuits shall be deenergized before work is done on such circuits unless hot-line tools are used. Suitable warning signs shall be posted by the individuals who are to do the work. Switches shall be locked out or other measures taken which shall prevent the power circuits from being energized without the knowledge of the individuals working on them. Such locks, signs, or preventative devices shall be removed only by the person who installed them or by authorized personnel.

§ 56.12018 Identification of power switches.

Principal power switches shall be labeled to show which units they control, unless identification can be made readily by location.

§ 56.12019 Access to stationary electrical equipment or switchgear.

Where access is necessary, suitable clearance shall be provided at stationary electrical equipment or switchgear.

§ 56.12020 Protection of persons at switchgear.

Dry wooden platforms, insulating mats, or other electrically nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, non-current-carrying

parts of the power switches to be operated may be used.

§ 56.12021 Danger signs.

Suitable danger signs shall be posted at all major electrical installations.

§ 56.12022 Authorized persons at major electrical installations.

Areas containing major electrical installations shall be entered only by authorized persons.

§ 56.12023 Guarding electrical connections and resistor grids.

Electrical connections and resistor grids that are difficult or impractical to insulate shall be guarded, unless protection is provided by location.

§ 56.12025 Grounding circuit enclosures.

All metal enclosing or encasing electrical circuits shall be grounded or provided with equivalent protection. This requirement does not apply to battery-operated equipment.

§ 56.12026 Grounding transformer and switchgear enclosures.

Metal fencing and metal buildings enclosing transformers and switchgear shall be grounded.

§ 56.12027 Grounding mobile equipment.

Frame grounding or equivalent protection shall be provided for mobile equipment powered through trailing cables.

§ 56.12028 Testing grounding systems.

Continuity and resistance of grounding systems shall be tested immediately after installation, repair, and modification; and annually thereafter. A record of the resistance measured during the most recent tests shall be made available on a request by the Secretary or his duly authorized representative.

§ 56.12030 Correction of dangerous conditions.

When a potentially dangerous condition is found it shall be corrected before equipment or wiring is energized.

§ 56.12032 Inspection and cover plates.

Inspection and cover plates on electrical equipment and junction boxes shall be kept in place at all times except during testing or repairs.

§ 56.12033 Hand-held electric tools.

Hand-held electric tools shall not be operated at high potential voltages.

§ 56.12034 Guarding around lights.

Portable extension lights, and other lights that by their location present a shock or burn hazard, shall be guarded.

§ 56.12035 Weatherproof lamp sockets.

Lamp sockets shall be of a weatherproof type where they are exposed to weather or wet conditions that may interfere with illumination or create a shock hazard.

§ 56.12036 Fuse removal or replacement.

Fuses shall not be removed or replaced by hand in an energized circuit, and they shall not otherwise be removed or replaced in an energized circuit unless equipment and techniques especially designed to prevent electrical shock are provided and used for such purpose.

§ 56.12037 Fuses in high-potential circuits.

Fuse tongs or hot line tools shall be used when fuses are removed or replaced in high-potential circuits.

§ 56.12038 Attachment of trailing cables.

Trailing cables shall be attached to machines in a suitable manner to protect the cable from damage and to prevent strain on the electrical connections.

§ 56.12039 Protection of surplus trailing cables.

Surplus trailing cables to shovels, cranes and similar equipment shall be—

(a) Stored in cable boats;

(b) Stored on reels mounted on the equipment; or

(c) Otherwise protected from mechanical damage.

§ 56.12040 Installation of operating controls.

Operating controls shall be installed so that they can be operated without danger of contact with energized conductors.

§ 56.12041 Design of switches and starting boxes.

Switches and starting boxes shall be of safe design and capacity.

§ 56.12042 Track bonding.

Both rails shall be bonded or welded at every joint and rails shall be crossbonded at least every 200 feet if the track serves as the return trolley circuit. When rails are moved, replaced, or broken bonds are discovered, they shall be rebonded within three working shifts.

§ 56.12045 Overhead powerlines.

Overhead high-potential powerlines shall be installed as specified by the National Electrical Code.

§ 56.12047 Guy wires.

Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, part 2, entitled ''Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines'' (also referred to as National Bureau of Standards Handbook 81, November 1, 1961) and Supplement 2 thereof issued March 1968, which are hereby incorporated by reference and made a part hereof. These publications and documents may be obtained from the National Institute of Science and Technology, 100 Bureau Drive, Stop 3460, Gaithersburg, MD 20899–3460. Telephone: 301–975–6478 (not a toll free number); *http://ts.nist.gov/nvl;* or from the Government Printing Office, Information Dissemination (Superintendent of Documents), P.O. Box 371954, Pittsburgh, PA 15250–7954; Telephone: 866–512–1800 (toll free) or 202–512–1800, *http://bookstore.gpo.gov*, or may be examined in any Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration.

[50 FR 4054, Jan. 29, 1985, as amended at 60 FR 35695, July 11, 1995; 71 FR 16667, Apr. 3, 2006]

§ 56.12048 Communication conductors on power poles.

Telegraph, telephone, or signal wires shall not be installed on the same crossarm with power conductors. When carried on poles supporting powerlines, they shall be installed as specified by the National Electrical Code.

§ 56.12050 Installation of trolley wires.

Trolley wires shall be installed at least seven feet above rails where height permits, and aligned and supported to suitably control sway and sag.

§ 56.12053 Circuits powered from trolley wires.

Ground wires for lighting circuits powered from trolley wires shall be connected securely to the ground-return circuit.

§ 56.12065 Short circuit and lightning protection.

Powerlines, including trolley wires, and telephone circuits shall be protected against short circuits and lightning.

§ 56.12066 Guarding trolley wires and bare powerlines.

Where metallic tools or equipment can come in contact with trolley wires or bare powerlines, the lines shall be guarded or deenergized.

§ 56.12067 Installation of transformers.

Transformers shall be totally enclosed, or shall be placed at least 8 feet above the ground, or installed in a transformer house, or surrounded by a substantial fence at least 6 feet high and at least 3 feet from any energized parts, casings, or wiring.

§ 56.12068 Locking transformer enclosures.

Transformer enclosures shall be kept locked against unauthorized entry.

§ 56.12069 Lightning protection for telephone wires and ungrounded conductors.

Each ungrounded power conductor or telephone wire that leads underground and is directly exposed to lightning shall be equipped with suitable lightning arrestors of approved type within 100 feet of the point where the circuit enters the mine. Lightning arrestors shall be connected to a low resistance grounding medium on the surface and shall be separated from neutral grounds by a distance of not less than 25 feet.

§ 56.12071 Movement or operation of equipment near high-voltage power lines.

When equipment must be moved or operated near energized high-voltage powerlines (other than trolley lines) and the clearance is less than 10 feet, the lines shall be deenergized or other precautionary measures shall be taken.

Subpart L—Compressed Air and Boilers

§ 56.13001 General requirements for boilers and pressure vessels.

All boilers and pressure vessels shall be constructed, installed, and maintained in accordance with the standards and specifications of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

§ 56.13010 Reciprocating-type air compressors.

(a) Reciprocating-type air compressors rated over 10 horsepower shall be equipped with automatic temperature-actuated shutoff mechanisms which shall be set or adjusted to the compressor when the normal operating temperature is exceeded by more than 25 percent.

(b) However, this standard does not apply to reciprocating-type air compressors rated over 10 horsepower if equipped with fusible plugs that were installed in the compressor discharge lines before November 15, 1979, and designed to melt at temperatures at least 50 degrees below the flash point of the compressors' lubricating oil.

§ 56.13011 Air receiver tanks.

Air receiver tanks shall be equipped with one or more automatic pressure-relief valves. The total relieving capacity of the relief valves shall prevent pressure from exceeding the maximum allowable working pressure in a receiver tank by not more than 10 percent. Air receiver tanks also shall be equipped with indicating pressure gauges which accurately measure the pressure within the air receiver tanks.

§ 56.13012 Compressor air intakes.

Compressor air intakes shall be installed to ensure that only clean, uncontaminated air enters the compressors.

§ 56.13015 Inspection of compressed-air receivers and other unfired pressure vessels.

(a) Compressed-air receivers and other unfired pressure vessels shall be inspected by inspectors holding a valid National Board Commission and in accordance with the applicable chapters of the National Board Inspection Code, a Manual for Boiler and Pressure Vessel Inspectors, 1979. This code is incorporated by reference and made a part of this standard. It may be examined at any Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration, and may be obtained from the publisher, the National Board of Boiler and Pressure Vessel Inspector, 1055 Crupper Avenue, Columbus, Ohio 43229.

(b) Records of inspections shall be kept in accordance with requirements of the National Board Inspection Code, and the records shall be made available to the Secretary or his authorized representative.

§ 56.13017 Compressor discharge pipes.

Compressor discharge pipes where carbon build-up may occur shall be cleaned periodically as recommended by the manufacturer, but no less frequently than once every two years.

§ 56.13019 Pressure system repairs.

Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment shall

not be attempted until the pressure has been bled off.

§ 56.13020 Use of compressed air.

At no time shall compressed air be directed toward a person. When compressed air is used, all necessary precautions shall be taken to protect persons from injury.

§ 56.13021 High-pressure hose connections.

Except where automatic shutoff valves are used, safety chains or other suitable locking devices shall be used at connections to machines of high-pressure hose lines of ¾-inch inside diameter or larger, and between high-pressure hose lines of ¾-inch inside diameter or larger, where a connection failure would create a hazard.

§ 56.13030 Boilers.

(a) Fired pressure vessels (boilers) shall be equipped with water level gauges, pressure gauges, automatic pressure-relief valves, blowdown piping, and other safety devices approved by the American Society of Mechanical Engineers to protect against hazards from overpressure, flameouts, fuel interruptions and low water level, all as required by the appropriate sections, chapters and appendices listed in paragraphs (b) (1) and (2) of this section.

(b) These gauges, devices and piping shall be designed, installed, operated, maintained, repaired, altered, inspected, and tested by inspectors holding a valid National Board Commission and in accordance with the following listed sections, chapters and appendices:

(1) The ASME Boiler and Pressure Vessel Code, 1977, Published by the American Society of Mechanical Engineers.

SECTION AND TITLE

I Power Boilers.
II Material Specifications—Part A—Ferrous.
II Material Specifications—Part B—Nonferrous.
II Material Specifications—Part C—Welding Rods, Electrodes, and Filler Metals.
IV Heating Boilers
V Nondestructive Examination
VI Recommended Rules for Care and Operation of Heating Boilers
VII Recommended Rules for Care of Power Boilers

(2) The National Board Inspection Code, a Manual for Boiler and Pressure Vessel Inspectors, 1979, published by the National Board of Boiler and Pressure Vessel Inspectors.

CHAPTER AND TITLE

I Glossary of Terms
II Inspection of Boilers and Pressure Vessels
III Repairs and Alterations to Boiler and Pressure Vessels by Welding
IV Shop Inspection of Boilers and Pressure Vessels
V Inservice Inspection of Pressure Vessels by Authorized Owner-User Inspection Agencies

APPENDIX AND TITLE

A Safety and Safety Relief Valves
B Non-ASME Code Boilers and Pressure Vessels
C Storage of Mild Steel Covered Arc Welding Electrodes
D-R National Board ''R'' (Repair) Symbol Stamp
D-VR National Board ''VR'' (Repair of Safety and Safety Relief Valve) Symbol Stamp
D-VR1 Certificate of Authorization for Repair Symbol Stamp for Safety and Safety Relief Valves
D-VR2 Outline of Basic Elements of Written Quality Control System for Repairers of ASME Safety and Safety Relief Valves
D-VR3 Nameplate Stamping for ''VR''
E Owner-user Inspection Agencies
F Inspection Forms

(c) Records of inspections and repairs shall be kept in accordance with the requirements of the ASME Boiler and Pressure Vessel Code and the National Board Inspection Code. The records shall be made available to the Secretary or his authorized representative.

(d) Sections of the ASME Boiler and Pressure Vessel Code, 1977, listed in paragraph (b)(1) of this section, and chapters and appendices of the National Board Inspection Code, 1979, listed in paragraph (b)(2) of this section, are incorporated by reference and made a part of this standard. These publications may be obtained from the publishers, the American Society of Mechanical Engineers, 22 Law Drive, P.O. Box 2900, Fairfield, New Jersey 07007, Phone: 800–843–2763 (toll free); *http://www.asme.org*, and the National Board

of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229. The publications may be examined at any Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration.

[50 FR 4054, Jan. 29, 1985, as amended at 71 FR 16667, Apr. 3, 2006]

Subpart M—Machinery and Equipment

SOURCE: 53 FR 32521, Aug. 25, 1988, unless otherwise noted.

§56.14000 Definitions.

The following definitions apply in this subpart.

Travelway. A passage, walk, or way regularly used or designated for persons to go from one place to another.

[53 FR 32521, Aug. 25, 1988, as amended at 69 FR 38840, June 29, 2004]

SAFETY DEVICES AND MAINTENANCE REQUIREMENTS

§56.14100 Safety defects; examination, correction and records.

(a) Self-propelled mobile equipment to be used during a shift shall be inspected by the equipment operator before being placed in operation on that shift.

(b) Defects on any equipment, machinery, and tools that affect safety shall be corrected in a timely manner to prevent the creation of a hazard to persons.

(c) When defects make continued operation hazardous to persons, the defective items including self-propelled mobile equipment shall be taken out of service and placed in a designated area posted for that purpose, or a tag or other effective method of marking the defective items shall be used to prohibit further use until the defects are corrected.

(d) Defects on self-propelled mobile equipment affecting safety, which are not corrected immediately, shall be reported to and recorded by the mine operator. The records shall be kept at the mine or nearest mine office from the date the defects are recorded, until the defects are corrected. Such records shall be made available for inspection by an authorized representative of the Secretary.

§56.14101 Brakes.

(a) *Minimum requirements*. (1) Self-propelled mobile equipment shall be equipped with a service brake system capable of stopping and holding the equipment with its typical load on the maximum grade it travels. This standard does not apply to equipment which is not originally equipped with brakes unless the manner in which the equipment is being operated requires the use of brakes for safe operation. This standard does not apply to rail equipment.

(2) If equipped on self-propelled mobile equipment, parking brakes shall be capable of holding the equipment with its typical load on the maximum grade it travels.

(3) All braking systems installed on the equipment shall be maintained in functional condition.

(b) *Testing*. (1) Service brake tests shall be conducted when an MSHA inspector has reasonable cause to believe that the service brake system does not function as required, unless the mine operator removes the equipment from service for the appropriate repair;

(2) The performance of the service brakes shall be evaluated according to Table M–1.

TABLE M–1

Gross vehicle weight lbs.	Equipment speed, MPH										
	10	11	12	13	14	15	16	17	18	19	20
Service Brake Maximum Stopping Distance—Feet											
0–36000	34	38	43	48	53	59	64	70	76	83	89
36000–70000	41	46	52	58	62	70	76	83	90	97	104
70000–140000	48	54	61	67	74	81	88	95	103	111	119
140000–250000	56	62	69	77	84	92	100	108	116	125	133
250000–400000	59	66	74	81	89	97	105	114	123	132	141

TABLE M–1—Continued

Gross vehicle weight lbs.	Equipment speed, MPH										
	10	11	12	13	14	15	16	17	18	19	20
Over 400000	63	71	78	86	94	103	111	120	129	139	148

Stopping distances are computed using a constant decleration of 9.66 FPS^2 and system response times of .5.1, 1.5, 2, 2.25 and 2.5 seconds for each increasing weight category respectively. Stopping distance values include a one-second operator response time.

TABLE M–2—THE SPEED OF A VEHICLE CAN BE DETERMINED BY CLOCKING IT THROUGH A 100-FOOT MEASURED COURSE AT CONSTANT VELOCITY USING TABLE M–2. WHEN THE SERVICE BRAKES ARE APPLIED AT THE END OF THE COURSE, STOPPING DISTANCE CAN BE MEASURED AND COMPARED TO TABLE M–1.

Miles per hour	10	11	12	13	14	15	16	17	18	19	20
Seconds Required to Travel 100 Feet	6.8	6.2	5.7	5.2	4.9	4.5	4.3	4.0	3.8	3.6	3.4

(3) Service brake tests shall be conducted under the direction of the mine operator in cooperation with an according to the instructions provided by the MSHA inspector as follows:

(i) Equipment capable of traveling at least 10 miles per hour shall be tested with a typical load for that particular piece of equipment. Front-end loaders shall be tested with the loader bucket empty. Equipment shall not be tested when carrying hazardous loads, such as explosives.

(ii) The approach shall be sufficient length to allow the equipment operator to reach and maintain a constant speed between 10 and 20 miles per hour prior to entering the 100 foot measured area. The constant speed shall be maintained up to the point when the equipment operator receives the signal to apply the brakes. The roadway shall be wide enough to accommodate the size of the equipment being tested. The ground shall be generally level, packed, and dry in the braking portion of the test course. Ground moisture may be present to the extent that it does not adversely affect the braking surface.

(iii) Braking is to be performed using only those braking systems, including auxiliary retarders, which are designed to bring the equipment to a stop under normal operating conditions. Parking or emergency (secondary) brakes are not to be actuated during the test.

(iv) The tests shall be conducted with the transmission in the gear appropriate for the speed the equipment is traveling except for equipment which is designed for the power train to be disengaged during braking.

(v) Testing speeds shall be a minimum of 10 miles per hour and a maximum of 20 miles per hour.

(vi) Stopping distances shall be measured from the point at which the equipment operator receives the signal to apply the service brakes to the final stopped position.

(4) Test results shall be evaluated as follows:

(i) If the initial test run is valid and the stopping distance does not exceed the corresponding stopping distance listed in Table 1, the performance of the service brakes shall be considered acceptable. For tests to be considered valid, the equipment shall not slide sideways or exhibit other lateral motion during the braking portion of the test.

(ii) If the equipment exceeds the maximum stopping distance in the initial test run, the mine operator may request from the inspector up to four additional test runs with two runs to be conducted in each direction. The performance of the service brakes shall be considered acceptable if the equipment does not exceed the maximum stopping distance on at least three of the additional tests.

(5) Where there is not an appropriate test site at the mine or the equipment is not capable or traveling at least 10 miles per hour, service brake tests will not be conducted. In such cases, the inspector will rely upon other available evidence to determine whether the

service brake system meets the performance requirement of this standard.

[53 FR 32521, Aug. 25, 1988; 53 FR 44588, Nov. 4, 1988]

§56.14102 Brakes for rail equipment.

Braking systems on railroad cars and locomotives shall be maintained in functional condition.

§56.14103 Operators stations.

(a) If windows are provided on operators' stations of self-propelled mobile equipment, the windows shall be made of safety glass or material with equivalent safety characteristics. The windows shall be maintained to provide visibility for safe operation.

(b) If damaged windows obscure visibility necessary for safe operation, or create a hazard to the equipment operator, the windows shall be replaced or removed. Damaged windows shall be replaced if absence of a window would expose the equipment operator to hazardous environmental conditions which would affect the ability of the equipment operator to safely operate the equipment.

(c) The operator's stations of self-propelled mobile equipment shall—

(1) Be free of materials that could create a hazard to persons by impairing the safe operation of the equipment; and

(2) Not be modified, in a manner that obscures visibility necessary for safe operation.

§56.14104 Tire repairs.

(a) Before a tire is removed from a vehicle for tire repair, the valve core shall be partially removed to allow for gradual deflation and then removed. During deflation, to the extent possible, persons shall stand outside of the potential trajectory of the lock ring of a multi-piece wheel rim.

(b) To prevent injury from wheel rims during tire inflation, one of the following shall be used:

(1) A wheel cage or other restraining device that will constrain all wheel rim components during an explosive separation of a multi-piece wheel rim, or during the sudden release of contained air in a single piece rim wheel; or

(2) A stand-off inflation device which permits persons to stand outside of the potential trajectory of wheel components.

§56.14105 Procedures during repairs or maintenance.

Repairs or maintenance of machinery or equipment shall be performed only after the power is off, and the machinery or equipment blocked against hazardous motion. Machinery or equipment motion or activation is permitted to the extent that adjustments or testing cannot be performed without motion or activation, provided that persons are effectively protected from hazardous motion.

§56.14106 Falling object protection.

(a) Fork-lift trucks, front-end loaders, and bulldozers shall be provided with falling object protective structures if used in an area where falling objects could create a hazard to the equipment operator.

(b) The protective structure shall be capable of withstanding the falling object loads to which it would be subjected.

§56.14107 Moving machine parts.

(a) Moving machine parts shall be guarded to protect persons from contacting gears, sprockets, chains, drive, head, tail, and takeup pulleys, flywheels, couplings, shafts, fan blades, and similar moving parts that can cause injury.

(b) Guards shall not be required where the exposed moving parts are at least seven feet away from walking or working surfaces.

§56.14108 Overhead drive belts.

Overhead drive belts shall be guarded to contain the whipping action of a broken belt if that action could be hazardous to persons.

§56.14109 Unguarded conveyors with adjacent travelways.

Unguarded conveyors next to the travelways shall be equipped with—

(a) Emergency stop devices which are located so that a person falling on or against the conveyor can readily deactivate the conveyor drive motor; or

(b) Railings which—

(1) Are positioned to prevent persons from falling on or against the conveyor;

(2) Will be able to withstand the vibration, shock, and wear to which they will be subjected during normal operation; and

(3) Are constructed and maintained so that they will not create a hazard.

§ 56.14110 Flying or falling materials.

In areas where flying or falling materials generated from the operation of screens, crushers, or conveyors present a hazard, guards, shields, or other devices that provide protection against such flying or falling materials shall be provided to protect persons.

§ 56.14111 Slusher, backlash guards and securing.

(a) When persons are exposed to slushing operations, the slushers shall be equipped with rollers and drum covers and anchored securely before slushing operations are started.

(b) Slushers rated over 10 horsepower shall be equipped with backlash guards, unless the equipment operator is otherwise protected.

(c) This standard does not apply to air tuggers of 10 horsepower or less that have only one cable and one drum.

§ 56.14112 Construction and maintenance of guards.

(a) Guards shall be constructed and maintained to—

(1) Withstand the vibration, shock, and wear to which they will be subjected during normal operation; and

(2) Not create a hazard by their use.

(b) Guards shall be securely in place while machinery is being operated, except when testing or making adjustments which cannot be performed without removal of the guard.

§ 56.14113 Inclined conveyors: backstops or brakes.

Backstops or brakes shall be installed on drive units of inclined conveyors to prevent the conveyors from running in reverse, creating a hazard to persons.

§ 56.14114 Air valves for pneumatic equipment.

A manual master quick-close type air valve shall be installed on all pneumatic-powered equipment if there is a hazard of uncontrolled movement when the air supply is activated. The valve shall be closed except when the equipment is being operated.

§ 56.14115 Stationary grinding machines.

Stationary grinding machines, other than special bit grinders, shall be equipped with—

(a) Peripheral hoods capable of withstanding the force of a bursting wheel and enclosing not less than 270° of the periphery of the wheel;

(b) Adjustable tool rests set so that the distance between the grinding surface of the wheel and the tool rest in not greater than ⅛ inch; and

(c) A safety washer on each side of the wheel.

[53 FR 32521, Aug. 25, 1988; 53 FR 44588, Nov. 4, 1988]

§ 56.14116 Hand-held power tools.

(a) Power drills, disc sanders, grinders and circular and chain saws, when used in the hand-held mode shall be operated with controls which require constant hand or finger pressure.

(b) Circular saws and chain saws shall not be equipped with devices which lock-on the operating controls.

§ 56.14130 Roll-over protective structures (ROPS) and seat belts.

(a) *Equipment included.* Roll-over protective structures (ROPS) and seat belts shall be installed on—

(1) Crawler tractors and crawler loaders;

(2) Graders;

(3) Wheel loaders and wheel tractors;

(4) The tractor portion of semi-mounted scrapers, dumpers, water wagons, bottom-dump wagons, rear-dump wagons, and towed fifth wheel attachments;

(5) Skid-steer loaders; and

(6) Agricultural tractors.

(b) *ROPS construction.* ROPS shall meet the requirements of the following Society of Automotive Engineers (SAE) publications, as applicable, which are incorporated by reference:

(1) SAE J1040, ''Performance Criteria for Roll-Over Protective Structures (ROPS) for Construction, Earthmoving, Forestry, and Mining Machines,'', 1986; or

(2) SAE J1194, ''Roll-Over Protective Structures (ROPS) for Wheeled Agricultural Tractors'', 1983.

(c) *ROPS labelling.* ROPS shall have a label permanently affixed to the structure identifying—

(1) The manufacturer's name and address;

(2) The ROPS model number; and

(3) The make and model number of the equipment for which the ROPS is designed.

(d) *ROPS installation.* ROPS shall be installed on the equipment in accordance with the recommendations of the ROPS manufacturer.

(e) *ROPS maintenance.* (1) ROPS shall be maintained in a condition that meets the performance requirements applicable to the equipment. If the ROPS is subjected to roll-over an abnormal structural loading, the equipment manufacturer or a registered professional engineer with knowledge and experience in ROPS design shall recertify that the ROPS meets the applicable performance requirements before it is returned to service.

(2) Alterations or repairs on ROPS shall be performed only with approval from the ROPS manufacturer or under the instructions of a registered professional engineer with knowledge and experience in ROPS design. The manufacturer or engineer shall certify that the ROPS meets the applicable performance requirements.

(f) *Exemptions.* (1) This standard does not apply to—

(i) Self-propelled mobile equipment manufactured prior to July 1, 1969;

(ii) Over-the-road type tractors that pull trailers or vans on highways;

(iii) Equipment that is only operated by remote control; and

(2) Self-propelled mobile equipment manufactured prior to October 24, 1988, that is equipped with ROPS and seat belts that meet the installation and performance requirements of 30 CFR 56.9088 (1986 edition) shall be considered in compliance with paragraphs (b) and (h) of this section.

(g) *Wearing seat belts.* Seat belts shall be worn by the equipment operator except that when operating graders from a standing position, the grader operator shall wear safety lines and a harness in place of a seat belt.

(h) *Seat belts construction.* Seat belts required under this section shall meet the requirement of SAE J386, ''Operator Restraint System for Off-Road Work Machines'' (1985, 1993, or 1997), or SAE J1194, ''Roll-Over Protective Structures (ROPS) for Wheeled Agricultural Tractors'' (1983, 1989, 1994, or 1999), as applicable, which are incorporated by reference.

(i) *Seat belt maintenance.* Seat belts shall be maintained in functional condition, and replaced when necessary to assure proper performance.

(j) *Publications.* The incorporation by reference of these publications is approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of these publications may be examined at any Metal and Nonmetal Mine Safety and Health District Office; at MSHA's Office of Standards, Regulations, and Variances, 201 12th Street South, Arlington, VA 22202–5452; 202–693–9440; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.* Copies may be purchased from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096–0001; 724–776–4841; *http://www.sae.org.*

[53 FR 32521, Aug. 25, 1988; 53 FR 44588, Nov. 4, 1988, as amended at 60 FR 33723, June 29, 1995; 67 FR 38385, June 4, 2002; 68 FR 19347, Apr. 21, 2003; 80 FR 52987, Sept. 2, 2015]

§56.14131 Seat belts for haulage trucks.

(a) Seat belts shall be provided and worn in haulage trucks.

(b) Seat belts shall be maintained in functional condition, and replaced when necessary to assure proper performance.

(c) Seat belts required under this section shall meet the requirements of SAE J386, ''Operator Restraint System for Off-Road Work Machines'' (1985,

1993, or 1997), which are incorporated by reference.

(d) The incorporation by reference of these publications is approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of these publications may be examined at any Metal and Nonmetal Mine Safety and Health District Office; at MSHA's Office of Standards, Regulations, and Variances, 201 12th Street South, Arlington, VA 22202–5452; 202–693–9440; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*. Copies may be purchased from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096–0001; 724–776–4841; *http://www.sae.org*.

[50 FR 4054, Jan. 29, 1985, as amended at 67 FR 38385, June 4, 2002; 68 FR 19347, Apr. 21, 2003; 80 FR 52987, Sept. 2, 2015]

§ 56.14132 Horns and backup alarms.

(a) Manually-operated horns or other audible warning devices provided on self-propelled mobile equipment as a safety feature shall be maintained in functional condition.

(b)(1) When the operator has an obstructed view to the rear, self-propelled mobile equipment shall have—

(i) An automatic reverse-activated signal alarm;

(ii) A wheel-mounted bell alarm which sounds at least once for each three feet of reverse movement;

(iii) A discriminating backup alarm that covers the area of obstructed view; or

(iv) An observer to signal when it is safe to back up.

(2) Alarms shall be audible above the surrounding noise level.

(3) An automatic reverse-activated strobe light may be used at night in lieu of an audible reverse alarm.

(c) This standard does not apply to rail equipment.

Safety Practices and Operational Procedures

§ 56.14200 Warnings prior to starting or moving equipment.

Before starting crushers or moving self-propelled mobile equipment, equipment operators shall sound a warning that is audible above the surrounding noise level or use other effective means to warn all persons who could be exposed to a hazard from the equipment.

§ 56.14201 Conveyor start-up warnings.

(a) When the entire length of a conveyor is visible from the starting switch, the conveyor operator shall visually check to make certain that all persons are in the clear before starting the conveyor.

(b) When the entire length of the conveyor is not visible from the starting switch, a system which provides visible or audible warning shall be installed and operated to warn persons that the conveyor will be started. Within 30 seconds after the warning is given, the conveyor shall be started or a second warning shall be given.

§ 56.14202 Manual cleaning of conveyor pulleys.

Pulleys of conveyors shall not be cleaned manually while the conveyor is in motion.

§ 56.14203 Application of belt dressing.

Belt dressings shall not be applied manually while belts are in motion unless a pressurized-type applicator is used that allows the dressing to be applied from outside the guards.

§ 56.14204 Machinery lubrication.

Machinery or equipment shall not be lubricated manually while it is in motion where application of the lubricant may expose persons to injury.

§ 56.14205 Machinery, equipment, and tools.

Machinery, equipment, and tools shall not be used beyond the design capacity intended by the manufacturer where such use may create a hazard to persons.

§56.14206 Securing movable parts.

(a) When moving mobile equipment between workplaces, booms, forks, buckets, beds, and similar movable parts of the equipment shall be positioned in the travel mode and, if required for safe travel, mechanically secured.

(b) When mobile equipment is unattended or not in use, dippers, buckets and scraper blades shall be lowered to the ground. Other movable parts, such as booms, shall be mechanically secured or positioned to prevent movement which would create a hazard to persons.

[53 FR 32521, Aug. 25, 1988; 53 FR 44588, Nov. 4, 1988]

§56.14207 Parking procedures for unattended equipment.

Mobile equipment shall not be left unattended unless the controls are placed in the park position and the parking brake, if provided, is set. When parked on a grade, the wheels or tracks of mobile equipment shall be either chocked or turned into a bank.

§56.14208 Warning devices.

(a) Visible warning devices shall be used when parked mobile equipment creates a hazard to persons in other mobile equipment.

(b) Mobile equipment, other than forklifts, carrying loads that project beyond the sides or more than four feet beyond the rear of the equipment shall have a warning flag at the end of the projection. Under conditions of limited visibility these loads shall have a warning light at the end of the projection. Such flag or lights shall be attached to the end of the projection or be carried by persons walking beside or behind the projection.

§56.14209 Safety procedures for towing.

(a) A properly sized tow bar or other effective means of control shall be used to tow mobile equipment.

(b) Unless steering and braking are under the control of the equipment operator on the towed equipment, a safety chain or wire rope capable of withstanding the loads to which it could be subjected shall be used in conjunction with any primary rigging.

(c) This provision does not apply to rail equipment.

§56.14210 Movement of dippers, buckets, loading booms, or suspended loads.

(a) Dippers, buckets, loading booms, or suspended loads shall not be swung over the operators' stations of self-propelled mobile equipment until the equipment operator is out of the operator's station and in a safe location.

(b) This section does not apply when the equipment is specifically designed to protect the equipment operator from falling objects.

§56.14211 Blocking equipment in a raised position.

(a) Persons shall not work on top of, under, or work from mobile equipment in a raised position until the equipment has been blocked or mechanically secured to prevent it from rolling or falling accidentally.

(b) Persons shall not work on top of, under, or work from a raised component of mobile equipment until the component has been blocked or mechanically secured to prevent accidental lowering. The equipment must also be blocked or secured to prevent rolling.

(c) A raised component must be secured to prevent accidental lowering when persons are working on or around mobile equipment and are exposed to the hazard of accidental lowering of the component.

(d) Under this section, a raised component of mobile equipment is considered to be blocked or mechanically secured if provided with a functional load-locking device or a device which prevents free and uncontrolled descent.

(e) Blocking or mechanical securing of the raised component is required during repair or maintenance of elevated mobile work platforms.

§56.14212 Chains, ropes, and drive belts.

Chains, ropes, and drive belts shall be guided mechanically onto moving pulleys, sprockets, or drums except where equipment is designed specifically for hand feeding.

§ 56.14213 Ventilation and shielding for welding.

(a) Welding operations shall be shielded when performed at locations where arc flash could be hazardous to persons.

(b) All welding operations shall be well-ventilated.

§ 56.14214 Train warnings.

A warning that is audible above the surrounding noise level shall be sounded—

(a) Immediately prior to moving trains;

(b) When trains approach persons, crossings, other trains on adjacent tracks; and

(c) Any place where the train operator's vision is obscured.

§ 56.14215 Coupling or uncoupling cars.

Prior to coupling or uncoupling cars manually, trains shall be brought to a complete stop, and then moved at minimum tram speed until the coupling or uncoupling activity is completed. Coupling or uncoupling shall not be attempted from the inside of curves unless the railroad and cars are designed to eliminate hazards to persons.

§ 56.14216 Backpoling.

Backpoling of trolleys is prohibited except where there is inadequate clearance to reverse the trolley pole. Where backpoling is required, it shall be done only at the minimum tram speed of the trolley.

§ 56.14217 Securing parked railcars.

Parked railcars shall be blocked securely unless held effectively by brakes.

§ 56.14218 Movement of equipment on adjacent tracks.

When a locomotive on one track is used to move rail equipment on adjacent tracks, a chain, cable, or drawbar shall be used which is capable of meeting the loads to which it could be subjected.

§ 56.14219 Brakeman signals.

When a train is under the direction of a brakeman and the train operator cannot clearly recognize the brakeman's signals, the train operator shall bring the train to a stop.

APPENDIX I TO SUBPART M OF PART 56—NATIONAL CONSENSUS STANDARDS

Mine operators seeking further information regarding the construction and installation of falling object protective structures (FOPS) may consult the following national consensus standards, as applicable.

MSHA STANDARD 56.14106, FALLING OBJECT PROTECTION.

Equipment	National consensus standard
Front-end loaders and bulldozers.	Society of Automotive Engineers (SAE) minimum performance criteria for falling object protective structures (FOPS) SAE J231—January, 1981.
Fork-lift trucks	American National Standards Institute (ANSI) safety standard for low lift and high lift trucks, B 56.1, section 7.27—1983; or,
	American National Standards Institute (ANSI) standard, rough terrain fork lift trucks, B56.6—1987.

Subpart N—Personal Protection

§ 56.15001 First-aid materials.

Adequate first-aid materials, including stretchers and blankets, shall be provided at places convenient to all working areas. Water or neutralizing agents shall be available where corrosive chemicals or other harmful substances are stored, handled, or used.

§ 56.15002 Hard hats.

All persons shall wear suitable hard hats when in or around a mine or plant where falling objects may create a hazard.

§ 56.15003 Protective footwear.

All persons shall wear suitable protective footwear when in or around an area of a mine or plant where a hazard exists which could cause an injury to the feet.

§ 56.15004 Eye protection.

All persons shall wear safety glasses, goggles, or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which could cause injury to unprotected eyes.

§ 56.15005 Safety belts and lines.

Safety belts and lines shall be worn when persons work where there is danger of falling; a second person shall tend the lifeline when bins, tanks, or other dangerous areas are entered.

§ 56.15006 Protective equipment and clothing for hazards and irritants.

Special protective equipment and special protective clothing shall be provided, maintained in a sanitary and reliable condition and used whenever hazards of process or environment, chemical hazards, radiological hazards, or mechanical irritants are encountered in a manner capable of causing injury or impairment.

§ 56.15007 Protective equipment or clothing for welding, cutting, or working with molten metal.

Protective clothing or equipment and face shields, or goggles shall be worn when welding, cutting, or working with molten metal.

§ 56.15014 Eye protection when operating grinding wheels.

Face shields or goggles in good condition shall be worn when operating a grinding wheel.

[53 FR 32526, Aug. 25, 1988]

§ 56.15020 Life jackets and belts.

Life jackets or belts shall be worn where there is danger from falling into water.

Subpart O—Materials Storage and Handling

§ 56.16001 Stacking and storage of materials.

Supplies shall not be stacked or stored in a manner which creates tripping or fall-of-material hazards.

§ 56.16002 Bins, hoppers, silos, tanks, and surge piles.

(a) Bins, hoppers, silos, tanks, and surge piles, where loose unconsolidated materials are stored, handled or transferred shall be—

(1) Equipped with mechanical devices or other effective means of handling materials so that during normal operations persons are not required to enter or work where they are exposed to entrapment by the caving or sliding of materials; and

(2) Equipped with supply and discharge operating controls. The controls shall be located so that spills or overruns will not endanger persons.

(b) Where persons are required to move around or over any facility listed in this standard, suitable walkways or passageways shall be provided.

(c) Where persons are required to enter any facility listed in this standard for maintenance or inspection purposes, ladders, platforms, or staging shall be provided. No person shall enter the facility until the supply and discharge of materials have ceased and the supply and discharge equipment is locked out. Persons entering the facility shall wear a safety belt or harness equipped with a lifeline suitably fastened. A second person, similarly equipped, shall be stationed near where the lifeline is fastened and shall constantly adjust it or keep it tight as needed, with minimum slack.

§ 56.16003 Storage of hazardous materials.

Materials that can create hazards if accidentally liberated from their containers shall be stored in a manner that minimizes the dangers.

§ 56.16004 Containers for hazardous materials.

Containers holding hazardous materials must be of a type approved for such use by recognized agencies.

[67 FR 42389, June 21, 2002]

§ 56.16005 Securing gas cylinders.

Compressed and liquid gas cylinders shall be secured in a safe manner.

§ 56.16006 Protection of gas cylinder valves.

Valves on compressed gas cylinders shall be protected by covers when being transported or stored, and by a safe location when the cylinders are in use.

§ 56.16007 Taglines, hitches, and slings.

(a) Taglines shall be attached to loads that may require steadying or guidance while suspended.

(b) Hitches and slings used to hoist materials shall be suitable for the particular material handled.

§ 56.16009 Suspended loads.

Persons shall stay clear of suspended loads.

§ 56.16010 Dropping materials from overhead.

To protect personnel, material shall not be dropped from an overhead elevation until the drop area is first cleared of personnel and the area is then either guarded or a suitable warning is given.

§ 56.16011 Riding hoisted loads or on the hoist hook.

Persons shall not ride on loads being moved by cranes or derricks, nor shall they ride the hoisting hooks unless such method eliminates a greater hazard.

§ 56.16012 Storage of incompatible substances.

Chemical substances, including concentrated acids and alkalies, shall be stored to prevent inadvertent contact with each other or with other substances, where such contact could cause a violent reaction or the liberation of harmful fumes or gases.

§ 56.16013 Working with molten metal.

Suitable warning shall be given before molten metal is poured and before a container of molten metal is moved.

§ 56.16014 Operator-carrying overhead cranes.

Operator-carrying overhead cranes shall be provided with—

(a) Bumpers at each end of each rail;

(b) Automatic switches to halt uptravel of the blocks before they strike the hoist;

(c) Effective audible warning signals within easy reach of the operator; and

(d) A means to lock out the disconnect switch.

§ 56.16015 Work or travel on overhead crane bridges.

No person shall work from or travel on the bridge of an overhead crane unless the bridge is provided with substantial footwalks with toeboards and railings the length of the bridge.

§ 56.16016 Lift trucks.

Fork and other similar types of lift trucks shall be operated with the—

(a) Upright tilted back to steady and secure the load;

(b) Load in the upgrade position when ascending or descending grades in excess of 10 percent;

(c) Load not raised or lowered enroute except for minor adjustments; and

(d) Load-engaging device downgrade when traveling unloaded on all grades.

Subpart P—Illumination

§ 56.17001 Illumination of surface working areas.

Illumination sufficient to provide safe working conditions shall be provided in and on all surface structures, paths, walkways, stairways, switch panels, loading and dumping sites, and work areas.

Subpart Q—Safety Programs

§ 56.18002 Examination of working places.

(a) A competent person designated by the operator shall examine each working place at least once each shift before miners begin work in that place, for conditions that may adversely affect safety or health.

(1) The operator shall promptly notify miners in any affected areas of any conditions found that may adversely affect safety or health and promptly initiate appropriate action to correct such conditions.

(2) Conditions noted by the person conducting the examination that may present an imminent danger shall be brought to the immediate attention of the operator who shall withdraw all persons from the area affected (except persons referred to in section 104(c) of the Federal Mine Safety and Health Act of 1977) until the danger is abated.

(b) A record of each examination shall be made before the end of the shift for which the examination was conducted. The record shall contain the name of the person conducting the examination; date of the examination;

location of all areas examined; and description of each condition found that may adversely affect the safety or health of miners.

(c) When a condition that may adversely affect safety or health is corrected, the examination record shall include, or be supplemented to include, the date of the corrective action.

(d) The operator shall maintain the examination records for at least one year, make the records available for inspection by authorized representatives of the Secretary and the representatives of miners, and provide these representatives a copy on request.

[84 FR 51401, Sept. 30, 2019]

§ 56.18006 New employees.

New employees shall be indoctrinated in safety rules and safe work procedures.

§ 56.18009 Designation of person in charge.

When persons are working at the mine, a competent person designated by the mine operator shall be in attendance to take charge in case of an emergency.

§ 56.18010 First aid.

An individual capable of providing first aid shall be available on all shifts. The individual shall be currently trained and have the skills to perform patient assessment and artificial respiration; control bleeding; and treat shock, wounds, burns, and musculoskeletal injuries. First aid training shall be made available to all interested miners.

[61 FR 50436, Sept. 26, 1996]

§ 56.18012 Emergency telephone numbers.

Emergency telephone numbers shall be posted at appropriate telephones.

§ 56.18013 Emergency communications system.

A suitable communication system shall be provided at the mine to obtain assistance in the event of an emergency.

§ 56.18014 Emergency medical assistance and transportation.

Arrangements shall be made in advance for obtaining emergency medical assistance and transportation for injured persons.

§ 56.18020 Working alone.

No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety unless he can communicate with others, can be heard, or can be seen.

Subpart R—Personnel Hoisting

§ 56.19000 Application.

(a) The hoisting standards in this subpart apply to those hoists and appurtenances used for hoisting persons. However, where persons may be endangered by hoists and appurtenances used solely for handling ore, rock, and materials, the appropriate standards should be applied.

(b) Standards 56.19021 through 56.19028 apply to wire ropes in service used to hoist persons with an incline hoist on the surface.

(c) Emergency hoisting facilities should conform to the extent possible to safety requirements for other hoists, and should be adequate to remove the persons from the mine with a minimum of delay.

HOISTS

§ 56.19001 Rated capacities.

Hoists shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes used.

§ 56.19002 Anchoring.

Hoists shall be anchored securely.

§ 56.19003 Driving mechanism connections.

Belt, rope, or chains shall not be used to connect driving mechanisms to man hoists.

§ 56.19004 Brakes.

Any hoist used to hoist persons shall be equipped with a brake or brakes which shall be capable of holding its

fully loaded cage, skip, or bucket at any point in the shaft.

§ 56.19005 Locking mechanism for clutch.

The operating mechanism of the clutch of every man-hoist drum shall be provided with a locking mechanism, or interlocked electrically or mechanically with the brake to prevent accidental withdrawal of the clutch.

§ 56.19006 Automatic hoist braking devices.

Automatic hoists shall be provided with devices that automatically apply the brakes in the event of power failure.

§ 56.19007 Overtravel and overspeed devices.

All man hoists shall be provided with devices to prevent overtravel. When utilized in shafts exceeding 100 feet in depth, such hoists shall also be provided with overspeed devices.

§ 56.19008 Friction hoist synchronizing mechanisms.

Where creep or slip may alter the effective position of safety devices, friction hoists shall be equipped with synchronizing mechanisms that recalibrate the overtravel devices and position indicators.

§ 56.19009 Position indicator.

An accurate and reliable indicator of the position of the cage, skip, bucket, or cars in the shaft shall be provided.

§ 56.19010 Location of hoist controls.

Hoist controls shall be placed or housed so that the noise from machinery or other sources will not prevent hoistmen from hearing signals.

§ 56.19011 Drum flanges.

Flanges on drums shall extend radially a minimum of 4 inches or three rope diameters beyond the last wrap, whichever is the lesser.

§ 56.19012 Grooved drums.

Where grooved drums are used, the grooves shall be of suitable size and pitch for the ropes used.

§ 56.19013 Diesel- and other fuel-injection-powered hoists.

Where any diesel or similar fuel-injection engine is used to power a hoist, the engine shall be equipped with a damper or other cutoff in its air intake system. The control handle shall be clearly labeled to indicate that its intended function is for emergency stopping only.

§ 56.19014 Friction hoist overtravel protection.

In a friction hoist installation, tapered guides or other approved devices shall be installed above and below the limits of regular travel of the conveyance and arranged to prevent overtravel in the event of failure of other devices.

§ 56.19017 Emergency braking for electric hoists.

Each electric hoist shall be equipped with a manually-operable switch that will initiate emergency braking action to bring the conveyance and the counterbalance safely to rest. This switch shall be located within reach of the hoistman in case the manual controls of the hoist fail.

§ 56.19018 Overtravel by-pass switches.

When an overtravel by-pass switch is installed, the switch shall function so as to allow the conveyance to be moved through the overtravel position when the switch is held in the closed position by the hoistman. The overtravel by-pass switch shall return automatically to the open position when released by the hoistman.

[50 FR 4054, Jan. 29, 1985; 50 FR 20100, May 14, 1985]

WIRE ROPES

AUTHORITY: Sec. 101, Federal Mine Safety and Health Act of 1977, Pub. L. 91–173 as amended by Pub. L. 95–164, 91 Stat. 1291 (30 U.S.C. 811).

§ 56.19021 Minimum rope strength.

At installation, the nominal strength (manufacturer's published catalog strength) of wire ropes used for hoisting shall meet the minimum rope strength values obtained by the following formulas in which ''L'' equals

the maximum suspended rope length in feet:

(a) *Winding drum ropes* (all constructions, including rotation resistant).

For rope lengths less than 3,000 feet:
Minimum Value = Static Load × (7.0–0.001L)
For rope lengths 3,000 feet or greater:
Minimum Value = Static Load × 4.0

(b) *Friction drum ropes*.

For rope lengths less than 4,000 feet:
Minimum Value = Static Load × (7.0–0.0005L)
For rope lengths 4,000 feet or greater:
Minimum Value = Static Load × 5.0

(c) *Tail ropes* (balance ropes).

Minimum Value = Weight of Rope × 7.0

§ 56.19022 Initial measurement.

After initial rope stretch but before visible wear occurs, the rope diameter of newly installed wire ropes shall be measured at least once in every third interval of active length and the measurements averaged to establish a baseline for subsequent measurements. A record of the measurements and the date shall be made by the person taking the measurements. This record shall be retained until the rope is retired from service.

[50 FR 4054, Jan. 29, 1985, as amended at 60 FR 33723, June 29, 1995]

§ 56.19023 Examinations.

(a) At least once every fourteen calendar days, each wire rope in service shall be visually examined along its entire active length for visible structural damage, corrosion, and improper lubrication or dressing. In addition, visual examination for wear and broken wires shall be made at stress points, including the area near attachments, where the rope rests on sheaves, where the rope leaves the drum, at drum crossovers, and at change-of-layer regions. When any visible condition that results in a reduction of rope strength is present, the affected portion of the rope shall be examined on a daily basis.

(b) Before any person is hoisted with a newly installed wire rope or any wire rope that has not been examined in the previous fourteen calendar days, the wire rope shall be examined in accordance with paragraph (a) of this section.

(c) At least once every six months, nondestructive tests shall be conducted of the active length of the rope, or rope diameter measurements shall be made—

(1) Wherever wear is evident;

(2) Where the hoist rope rests on sheaves at regular stopping points;

(3) Where the hoist rope leaves the drum at regular stopping points; and

(4) At drum crossover and change-of-layer regions.

(d) At the completion of each examination required by paragraph (a) of this section, the person making the examination shall certify, by signature and date, that the examination has been made. If any condition listed in paragraph (a) of this section is present, the person conducting the examination shall make a record of the condition and the date. Certifications and records of examinations shall be retained for one year.

(e) The person making the measurements or nondestructive tests as required by paragraph (c) of this section shall record the measurements or test results and the date. This record shall be retained until the rope is retired from service.

[50 FR 4054, Jan. 29, 1985, as amended at 60 FR 33723, June 29, 1995]

§ 56.19024 Retirement criteria.

Unless damage or deterioration is removed by cutoff, wire ropes shall be removed from service when any of the following conditions occurs:

(a) The number of broken wires within a rope lay length, excluding filler wires, exceeds either—

(1) Five percent of the total number of wires; or

(2) Fifteen percent of the total number of wires within any strand.

(b) On a regular lay rope, more than one broken wire in the valley between strands in one rope lay length.

(c) A loss of more than one-third of the original diameter of the outer wires.

(d) Rope deterioration from corrosion.

(e) Distortion of the rope structure.

(f) Heat damage from any source.

(g) Diameter reduction due to wear that exceeds six percent of the baseline diameter measurement.

(h) Loss of more than ten percent of rope strength as determined by nondestructive testing.

§ 56.19025 Load end attachments.

(a) Wire rope shall be attached to the load by a method that develops at least 80 percent of the nominal strength of the rope.

(b) Except for terminations where use of other materials is a design feature, zinc (spelter) shall be used for socketing wire ropes. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(c) Load end attachment methods using splices are prohibited.

§ 56.19026 Drum end attachment.

(a) For drum end attachment, wire rope shall be attached—

(1) Securely by clips after making one full turn around the drum spoke;

(2) Securely by clips after making one full turn around the shaft, if the drum is fixed to the shaft; or

(3) By properly assembled anchor bolts, clamps, or wedges, provided that the attachment is a design feature of the hoist drum. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(b) A minimum of three full turns of wire rope shall be on the drum when the rope is extended to its maximum working length.

§ 56.19027 End attachment reterminination.

Damaged or deteriorated wire rope shall be removed by cutoff and the rope reterminated where there is—

(a) More than one broken wire at an attachment;

(b) Improper installation of an attachment;

(c) Slippage at an attachment; or

(d) Evidence of deterioration from corrosion at an attachment.

§ 56.19028 End attachment replacement.

Wire rope attachments shall be replaced when cracked, deformed, or excessively worn.

§ 56.19030 Safety device attachments.

Safety device attachments to hoist ropes shall be selected, installed, and maintained according to manufacturers' specifications to minimize internal corrosion and weakening of the hoist rope.

HEADFRAMES AND SHEAVES

§ 56.19035 Headframe design.

All headframes shall be constructed with suitable design considerations to allow for all dead loads, live loads, and wind loads.

§ 56.19036 Headframe height.

Headframes shall be high enough to provide clearance for overtravel and safe stopping of the conveyance.

§ 56.19037 Fleet angles.

Fleet angles on hoists installed after November 15, 1979, shall not be greater than one and one-half degrees for smooth drums or two degrees for grooved drums.

§ 56.19038 Platforms around elevated head sheaves.

Platforms with toeboards and handrails shall be provided around elevated head sheaves.

CONVEYANCES

§ 56.19045 Metal bonnets.

Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any inclineshaft with an angle of inclination of forty-five degrees from the horizontal, shall be covered with a metal bonnet.

§ 56.19049 Hoisting persons in buckets.

Buckets shall not be used to hoist persons except during shaft sinking operations, inspection, maintenance, and repairs.

§ 56.19050 Bucket requirements.

Buckets used to hoist persons during vertical shaft sinking operations shall—

(a) Be securely attached to a crosshead when traveling in either direction between the lower and upper crosshead parking locations;

(b) Have overhead protection when the shaft depth exceeds 50 feet;

(c) Have sufficient depth or a suitably designed platform to transport persons safely in a standing position; and

(d) Have devices to prevent accidental dumping where the bucket is supported by a bail attached to its lower half.

§ 56.19054 Rope guides.

Where rope guides are used in shafts other than in shaft sinking operations, the rope guides shall be a type of lock coil construction.

HOISTING PROCEDURES

§ 56.19055 Availability of hoist operator for manual hoists.

When a manually operated hoist is used, a qualified hoistman shall remain within hearing of the telephone or signal device at all times while any person is underground.

§ 56.19056 Availability of hoist operator for automatic hoists.

When automatic hoisting is used, a competent operator of the hoist shall be readily available at or near the hoisting device while any person is underground.

§ 56.19057 Hoist operator's physical fitness.

No person shall operate a hoist unless within the preceding 12 months he has had a medical examination by a qualified, licensed physician who shall certify his fitness to perform this duty. Such certification shall be available at the mine.

§ 56.19058 Experienced hoist operators.

Only experienced hoistmen shall operate the hoist except in cases of emergency and in the training of new hoistmen.

§ 56.19061 Maximum hoisting speeds.

The safe speed for hoisting persons shall be determined for each shaft, and this speed shall not be exceeded. Persons should not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency.

§ 56.19062 Maximum acceleration and deceleration.

Maximum normal operating acceleration and deceleration shall not exceed 6 feet per second per second. During emergency braking, the deceleration shall not exceed 16 feet per second per second.

§ 56.19063 Persons allowed in hoist room.

Only authorized persons shall be in hoist rooms.

§ 56.19065 Lowering conveyances by the brakes.

Conveyances shall not be lowered by the brakes alone except during emergencies.

§ 56.19066 Maximum riders in a conveyance.

In shafts inclined over 45 degrees, the operator shall determine and post in the conveyance or at each shaft station the maximum number of persons permitted to ride in a hoisting conveyance at any one time. Each person shall be provided a minimum of 1.5 square feet of floor space.

§ 56.19067 Trips during shift changes.

During shift changes, an authorized person shall be in charge of each trip in which persons are hoisted.

§ 56.19068 Orderly conduct in conveyances.

Persons shall enter, ride, and leave conveyances in an orderly manner.

§ 56.19069 Entering and leaving conveyances.

Persons shall not enter or leave conveyances which are in motion or after a signal to move the conveyance has been given to the hoistman.

§ 56.19070 Closing cage doors or gates.

Cage doors or gates shall be closed while persons are being hoisted; they shall not be opened until the cage has come to a stop.

§ 56.19071 Riding in skips or buckets.

Persons shall not ride in skips or buckets with muck, supplies, materials, or tools other than small hand tools.

§ 56.19072 Skips and cages in same compartment.

When combinations of cages and skips are used in the same compartment, the cages shall be enclosed to protect personnel from flying material and the hoist speed reduced to manspeed as defined in standard 56.19061, but not to exceed 1,000 feet per minute. Muck shall not be hoisted with personnel during shift changes.

§ 56.19073 Hoisting during shift changes.

Rock or supplies shall not be hoisted in the same shaft as persons during shift changes, unless the compartments and dumping bins are partitioned to prevent spillage into the cage compartment.

§ 56.19074 Riding the bail, rim, bonnet, or crosshead.

Persons shall not ride the bail, rim, bonnet, or crosshead of any shaft conveyance except when necessary for inspection and maintenance, and then only when suitable protection for persons is provided.

§ 56.19075 Use of open hooks.

Open hooks shall not be used to hoist buckets or other conveyances.

§ 56.19076 Maximum speeds for hoisting persons in buckets.

When persons are hoisted in buckets, speeds shall not exceed 500 feet per minute and shall not exceed 200 feet per minute when within 100 feet of the intended station.

§ 56.19077 Lowering buckets.

Buckets shall be stopped about 15 feet from the shaft bottom to await a signal from one of the crew on the bottom for further lowering.

§ 56.19078 Hoisting buckets from the shaft bottom.

All buckets shall be stopped after being raised about 3 feet above the shaft bottom. A bucket shall be stabilized before a hoisting signal is given to continue hoisting the bucket to the crosshead. After a hoisting signal is given, hoisting to the crosshead shall be at a minimum speed. The signaling device shall be attended constantly until a bucket reaches the guides. When persons are hoisted, the signaling devices shall be attended until the crosshead has been engaged.

§ 56.19079 Blocking mine cars.

Where mine cars are hoisted by cage or skip, means for blocking cars shall be provided at all landings and also on the cage.

§ 56.19080 Hoisting tools, timbers, and other materials.

When tools, timbers, or other materials are being lowered or raised in a shaft by means of a bucket, skip, or cage, they shall be secured or so placed that they will not strike the sides of the shaft.

§ 56.19081 Conveyances not in use.

When conveyances controlled by a hoist operator are not in use, they shall be released and the conveyances shall be raised or lowered a suitable distance to prevent persons from boarding or loading the conveyances.

§ 56.19083 Overtravel backout device.

A manually operated device shall be installed on each electric hoist that will allow the conveyance or counterbalance to be removed from an overtravel position. Such device shall not release the brake, or brakes, holding the overtravelled conveyance or counterbalance until sufficient drive motor torque has been developed to assure movement of the conveyance or counterbalance in the correct direction only.

SIGNALING

§ 56.19090 Dual signaling systems.

There shall be at least two effective approved methods of signaling between each of the shaft stations and the hoist room, one of which shall be a telephone or speaking tube.

§ 56.19091 Signaling instructions to hoist operator.

Hoist operators shall accept hoisting instructions only by the regular signaling system unless it is out of order. In such an event, and during other emergencies, the hoist operator shall accept instructions to direct movement

of the conveyances only from authorized persons.

§ 56.19092 Signaling from conveyances.

A method shall be provided to signal the hoist operator from cages or other conveyances at any point in the shaft.

§ 56.19093 Standard signal code.

A standard code of hoisting signals shall be adopted and used at each mine. The movement of a shaft conveyance on a ''one bell'' signal is prohibited.

§ 56.19094 Posting signal code.

A legible signal code shall be posted prominently in the hoist house within easy view of the hoistman, and at each place where signals are given or received.

§ 56.19095 Location of signal devices.

Hoisting signal devices shall be positioned within easy reach of persons on the shaft bottom or constantly attended by a person stationed on the lower deck of the sinking platform.

§ 56.19096 Familiarity with signal code.

Any person responsible for receiving or giving signals for cages, skips, and mantrips when persons or materials are being transported shall be familiar with the posted signaling code.

SHAFTS

§ 56.19100 Shaft landing gates.

Shaft landings shall be equipped with substantial safety gates so constructed that materials will not go through or under them; gates shall be closed except when loading or unloading shaft conveyances.

§ 56.19101 Stopblocks and derail switches.

Positive stopblocks or a derail switch shall be installed on all tracks leading to a shaft collar or landing.

§ 56.19102 Shaft guides.

A means shall be provided to guide the movement of a shaft conveyance.

§ 56.19103 Dumping facilities and loading pockets.

Dumping facilities and loading pockets shall be constructed so as to minimize spillage into the shaft.

§ 56.19104 Clearance at shaft stations.

Suitable clearance at shaft stations shall be provided to allow safe movement of persons, equipment, and materials.

§ 56.19105 Landings with more than one shaft entrance.

A safe means of passage around open shaft compartments shall be provided on landings with more than one entrance to the shaft.

§ 56.19106 Shaft sets.

Shaft sets shall be kept in good repair and clean of hazardous material.

§ 56.19107 Precautions for work in compartment affected by hoisting operation.

Hoistmen shall be informed when persons are working in a compartment affected by that hoisting operation and a ''Men Working in Shaft'' sign shall be posted at the hoist.

§ 56.19108 Posting warning signs during shaft work.

When persons are working in a shaft ''Men Working in Shaft'' signs shall be posted at all devices controlling hoisting operations that may endanger such persons.

§ 56.19109 Shaft inspection and repair.

Shaft inspection and repair work in vertical shafts shall be performed from substantial platforms equipped with bonnets or equivalent overhead protection.

§ 56.19110 Overhead protection for shaft deepening work.

A substantial bulkhead or equivalent protection shall be provided above persons at work deepening a shaft.

§ 56.19111 Shaft-sinking ladders.

Substantial fixed ladders shall be provided from the collar to as near the shaft bottom as practical during shaft-sinking operations, or an escape hoist powered by an emergency power source

shall be provided. When persons are on the shaft bottom, a chain ladder, wire rope ladder, or other extension ladders shall be used from the fixed ladder or lower limit of the escape hoist to the shaft bottom.

INSPECTION AND MAINTENANCE

§ 56.19120 Procedures for inspection, testing, and maintenance.

A systematic procedure of inspection, testing, and maintenance of shafts and hoisting equipment shall be developed and followed. If it is found or suspected that any part is not functioning properly, the hoist shall not be used until the malfunction has been located and repaired or adjustments have been made.

§ 56.19121 Recordkeeping.

At the time of completion, the person performing inspections, tests, and maintenance of hoisting equipment required in standard 56.19120 shall certify, by signature and date, that they have been done. A record of any part that is not functioning properly shall be made and dated. Certifications and records shall be retained for one year.

(Sec. 101, Pub. L. 91–173 as amended by Pub. L. 95–164, 91 Stat. 1291 (30 U.S.C. 811))

[50 FR 4054, Jan. 29, 1985, as amended at 60 FR 33723, June 29, 1995]

§ 56.19122 Replacement parts.

Parts used to repair hoists shall have properties that will ensure the proper and safe function of the hoist.

§ 56.19129 Examinations and tests at beginning of shift.

Hoistmen shall examine their hoists and shall test overtravel, deadman controls, position indicators, and braking mechanisms at the beginning of each shift.

§ 56.19130 Conveyance shaft test.

Before hoisting persons and to assure that the hoisting compartments are clear of obstructions, empty hoist conveyances shall be operated at least one round trip after:

(a) Any hoist or shaft repairs or related equipment repairs that might restrict or obstruct conveyance clearance;

(b) Any oversize or overweight material or equipment trips that might restrict or obstruct conveyance clearance;

(c) Blasting in or near the shaft that might restrict or obstruct conveyance clearance; or

(d) Remaining idle for one shift or longer.

§ 56.19131 Hoist conveyance connections.

Hoist conveyance connections shall be inspected at least once during any 24-hour period that the conveyance is used for hoisting persons.

§ 56.19132 Safety catches.

(a) A performance drop test of hoist conveyance safety catches shall be made at the time of installation, or prior to installation, in a mockup of the actual installation. The test shall be certified to in writing by the manufacturer or by a registered professional engineer performing the test.

(b) After installation and before use, and at the beginning of any seven day period during which the conveyance is to be used, the conveyance shall be suitably rested and the hoist rope slackened to test for the unrestricted functioning of the safety catches and their activating mechanisms.

(c) The safety catches shall be inspected by a competent person at the beginning of any 24-hour period that the conveyance is to be used.

§ 56.19133 Shaft.

Shafts that have not been inspected within the past 7 days shall not be used until an inspection has been conducted by a competent person.

§ 56.19134 Sheaves.

Sheaves in operating shafts shall be inspected weekly and kept properly lubricated.

§ 56.19135 Rollers in inclined shafts.

Rollers used in operating inclined shafts shall be lubricated, properly aligned, and kept in good repair.

Subpart S—Miscellaneous

§ 56.20001 Intoxicating beverages and narcotics.

Intoxicating beverages and narcotics shall not be permitted or used in or around mines. Persons under the influence of alcohol or narcotics shall not be permitted on the job.

§ 56.20002 Potable water.

(a) An adequate supply of potable drinking water shall be provided at all active working areas.

(b) The common drinking cup and containers from which drinking water must be dipped or poured are prohibited.

(c) Where single service cups are supplied, a sanitary container for unused cups and a receptacle for used cups shall be provided.

(d) When water is cooled by ice, the ice shall either be of potable water or shall not come in contact with the water.

(e) Potable water outlets shall be posted.

(f) Potable water systems shall be constructed to prevent backflow or backsiphonage of non-potable water.

§ 56.20003 Housekeeping.

At all mining operations—

(a) Workplaces, passageways, storerooms, and service rooms shall be kept clean and orderly;

(b) The floor of every workplace shall be maintained in a clean and, so far as possible, dry condition. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places shall be provided where practicable; and

(c) Every floor, working place, and passageway shall be kept free from protruding nails, splinters, holes, or loose boards, as practicable.

§ 56.20005 Carbon tetrachloride.

Carbon tetrachloride shall not be used.

§ 56.20008 Toilet facilities.

(a) Toilet facilities shall be provided at locations that are compatible with the mine operations and that are readily accessible to mine personnel.

(b) The facilities shall be kept clean and sanitary. Separate toilet facilities shall be provided for each sex except where toilet rooms will be occupied by no more than one person at a time and can be locked from the inside.

§ 56.20009 Tests for explosive dusts.

Dusts suspected of being explosive shall be tested for explosibility. If tests prove positive, appropriate control measures shall be taken.

§ 56.20010 Retaining dams.

If failure of a water or silt retaining dam will create a hazard, it shall be of substantial construction and inspected at regular intervals.

§ 56.20011 Barricades and warning signs.

Areas where health or safety hazards exist that are not immediately obvious to employees shall be barricaded, or warning signs shall be posted at all approaches. Warning signs shall be readily visible, legible, and display the nature of the hazard and any protective action required.

§ 56.20013 Waste receptacles.

Receptacles with covers shall be provided at suitable locations and used for the disposal of waste food and associated materials. They shall be emptied frequently and shall be maintained in a clean and sanitary condition.

§ 56.20014 Prohibited areas for food and beverages.

No person shall be allowed to consume or store food or beverages in a toilet room or in any area exposed to a toxic material.

PART 57—SAFETY AND HEALTH STANDARDS—UNDERGROUND METAL AND NONMETAL MINES

Subpart A—General

Sec.

57.1 Purpose and scope.
57.2 Definitions.

PROCEDURES

57.1000 Notification of commencement of operations and closing of mines.