

TITLE 62: MINING
CHAPTER I: DEPARTMENT OF NATURAL RESOURCES
PART 225
USE OF PERMISSIBLE EXPLOSIVES IN UNDERGROUND
COAL MINES

Section

225.10 Definitions

225.15 General Requirements

225.20 Penalty for Misbranding

225.35 Storage in General

225.40 Transportation of Permissible Explosives from Surface to Section Magazines

225.45 Storage of Permissible Explosives Underground

225.47 Inventory

225.50 Preparation

225.55 Shooting

225.60 Misfires

225.70 Ventilation

225.80 Certification and Training

AUTHORITY: Implementing Sections 20.01 through 20.41 and 27.01 through 27.03 and authorized by Section 2.12 of the Coal Mining Act (Ill. Rev. Stat. 1985, ch. 96 1/2, pars. 2001-2041, 2701-2703, 312).

SOURCE: Adopted at 10 Ill. Reg. 21839, effective January 25, 1987.

Section 225.10 Definitions

For purposes of this part only, the following words mean:

"Act" means the Coal Mining Act (Ill. Rev. Stat. 1985, ch. 96 1/2, par. 251 et. seq.)

"Acceptable container" means any sturdy container, in good condition, lined with nonsparking material. (e.g, solid wood of substantial or other nonsparking material of equal or greater strength).

"Approved container" means any container made of nonsparking material used to hold temporarily permissible explosives and electric detonators at the working face.

"Blasting Cable" means a two-conductor cable used for completing the circuit between the electric blasting cap and the electrical source to fire the electric blasting cap.

"Borehole" means a hole drilled into the working face for inserting permissible explosives.

"Electric blasting cap" means an electric detonator containing a charge of detonating compound which electric current ignites.

"Electric detonator" means a device which detonates a high-explosive charge by electrical ignition.

"Interval delay" means a device that helps control the blast sequence.

"Leg wire" means a wire attached to and forming a part of an electrical blasting cap.

"Magazine" means building or structure specially constructed to store permissible explosives.

"Mine Manager" means the person charged with the general direction of the underground work. Section 1.09 of Act (Ill. Rev. Stat. 1985 ch. 96 1/2, par. 259).

"Mining Board" means the board created under Section 2.01 and 2.02 of the Act (Ill. Rev. Stat. 1985, ch. 96 1/2, pars. 301, 302) and Section 5.04 of the Civil Administrative Code of Illinois (Ill. Rev. Stat. 1985, ch. 127 1/2, par. 5.04).

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

"Permissible explosives" means any chemical compound, mixture, or device, the primary purpose of which is to function by explosion, which explodes from an instantaneous release of gas and heat and will not cause the ignition of mixtures of methane and air when detonated. The Mine Safety and Health Administration must have approved it under 30 CFR 15.1-15.24 (1986). (The reference includes no later editions or amendments.)

"Primer" means a cartridge of permissible explosive with a cap in place to set off the permissible explosive.

"Shot Firer" means a person other than the mine manager or the section foreman whom the Mining Board has certified under Sections 225.80.

"Shunt" means to connect together the wires from a cap or a circuit in order to create a short circuit to prevent stray current from firing blasting caps.

"Stemming" means inert material packed between the permissible explosive charge and the out end of the borehole.

"Tamping" means the act of inserting, packing, stemming permissible explosives in a borehole.

"Tamping bar" means a rod made of wood or metal bar, tipped with five (5) inches of copper and is used to push permissible explosive charges into a borehole.

"Working face" means the vertical wall where a coal company is removing the coal.

Section 225.15 General Requirements

- a) Any operator of a coal mine in Illinois must follow the requirements of this Part, the Act and 62 Ill. Adm. Code 220.230 when using permissible explosives in underground coal mines.
- b) The Mining Board's approval under 62 Ill. Adm. Code 140.10 of a mining plan which includes shooting on shift depends on it meeting the standards of this part.

Section 225.20 Penalty for Misbranding

Any person, firm, or corporation who shall sell for use in the coal mines in this state any permissible explosives not stamped as herein required, or who shall knowingly sell for use in coal mines and in this state any permissible explosive which is untruthfully branded or stamped, and any person, firm, or corporation being a manufacturer of permissible explosives, or the agent of any such manufacturer of permissible explosives, who shall sell for use in any coal mine in this state any permissible explosive which shall not conform to the requirements of the Act shall be guilty of a Class B misdemeanor. Section 20.41 of Act (Ill. Rev. Stat. 1985 ch. 96 1/2, par. 2041)

Section 225.35 Storage in General

- a) Smoking, matches, open flames, and spark producing devices are forbidden:
 - 1) in any magazine;

- 2) within up to fifty feet of any outdoor magazine; or
 - 3) with any room containing an indoor magazine.
- b) All storage containers of permissible explosives or electric detonators must be plainly marked with reflective type material, "DANGER EXPLOSIVES."

Section 225.40 Transportation of Permissible Explosives from Surface to Section Magazines

- a) Any person transporting permissible explosives underground or transporting electric detonators underground must transport them in locked, acceptable container.
- b) Permissible explosives and/or electric detonators may not be transported in the same transportation vehicle with tools, supplies, or more than three people.
- c) If permissible explosives and detonators are transported in the same acceptable container then the permissible explosives and detonators shall be separated by at least a four inch partition made of nonsparking material.

Section 225.45 Storage of Permissible Explosives Underground

- a) Except as provided in Subsection (f) of this Section permissible explosives must be stored underground in a section magazine.
- b) The section magazine must be on the return air side of the section and placed in a crosscut or idle room neck a minimum of ten (10) feet from the roadway.
- c) The area around the section magazine must:
 - 1) be barricaded to prevent any machinery or person, other than a shot firer, a mine manager, or the section foreman from entering the area;
 - 2) be dry;
 - 3) be rockdusted to meet the requirements of Section 24.05 and 24.06 of the Act (Ill. Rev. Stat. 1985 ch. 96 1/2, pars. 2405, 2406)
 - 4) be free of combustible material; and
 - 5) have temporary roof supports installed at each corner.
- d) Only the shift mine manager, the section foreman, and shot firer may be allowed access to the section magazine. However, only the person doing the shooting may remove permissible explosives and electric detonators from the section magazine.
- e) Only a forty-eight (48) hour supply of permissible explosives, including any surplus remaining from the previous day, will be allowed in the section magazine. Each mine inspector can determine what a forty-eight (48) hour supply is for each mine based on the written inventory records of usage which 62 Ill. Adm. Code 225.47 requires.
- f) Permissible explosives and electric detonators must be stored in separate, approved containers at least ten (10) feet apart, located out of line of blast at a ninety degree (90°) angle from the working face and at least fifty (50) feet from the working face.

- g) The shot firer must store all approved containers clear of trailing cables and other sources of electric current, and away from mobile equipment.
- h) At the beginning of each shift, the shot firer must examine the roof around and over the section magazine where permissible explosives are stored.
- i) The shot firer must keep permissible explosives or electric detonators in their approved containers until immediately before use at the working face.
- j) Tools or other materials must not be stored with permissible explosives or electric detonators.

Section 225.47 Inventory

- a) At the beginning of each shift, the shot firer must record the quantity of:
 - 1) permissible explosives; and
 - 2) electric detonators stored in that section magazine.
- b) At the end of each shift, the shot firer must reconcile the quantity of permissible explosives and electric detonators used on that shift with the number of permissible explosives and electric detonators recorded as a result of the inventory which Subsection (a) requires.
- c) If after the inventory required in Subsections (a) and (b), the shot firer notes a shortage of permissible explosives then, the shot firer's supervisor shall be immediately advised.

Section 225.50 Preparation

- a) At no time shall more than hundred (100) pounds of permissible explosives be removed from a section magazine.
- b) A shot firer may have only up to twenty-five (25) pounds of permissible explosives and electric detonators in the shot firer's possession at any one time.
- c) Only nonsparking tools shall be used for opening permissible explosives containers.
- d) When entering the face area to be blasted, the shot firer must:
 - 1) visually examine the roof and ribs pursuant to Sections 13.04, 30.04, 30.05 of the Act (Ill. Rev. Stat. 1985 ch. 96 1/2, pars. 1304, 3004, 3005);
 - 2) check for methane pursuant to Sections 31.04 of the Act (Ill. Rev. Stat. 1985 ch. 96 1/2, par. 3104);
 - 3) clean the boreholes; and
 - 4) inspect the boreholes to see that they are:
 - A) of correct depth in relation to the cut and
 - B) properly placed.
- e) Boreholes must not be loaded while any other work is being performed in that room or entry.
- f) the shot firer must completely load each borehole before continuing on to the next borehole.

- g) The shot firer must make up primers only when loading the borehole using electric detonators of proper strength and time interval delay to ensure the proper breaking down of coal.
- h) When loading boreholes, the shot firer must place the primer in the borehole first pointing outward and the rest of the permissible explosives must be pushed into the hole in a continuous train without any compressible substance between
 - 1) the back of the hole and the permissible explosives, or
 - 2) between the permissible explosives and the stemming.
- i) The shot firer may only use a nonsparking tool for priming cartridges.
- j) The shot firer may only use a nonsparking tamping bar for loading boreholes.
- k) The shot firer may only stem boreholes with water filled plastic bags, rockdust, clay, or sand. Stemming with coal dust is prohibited.
- l) The shot firer must keep the blasting cable shunted until all boreholes are:
 - 1) loaded
 - 2) tied together and
 - 3) connected to the blasting cable.

Section 225.55 Shooting

- a) The shot firer may fire only twenty (20) shots in any given blast at the working face. The shot firer may blast only two (2) working faces per blast.
- b) The shot firer may only use one kind of permissible explosive or detonator in the same drill hole.
- c) After the shot firer loads all the boreholes, the shot firer must:
 - 1) remove all unused permissible explosives or unused electric detonators from face; and
 - 2) store the unused permissible explosives or unused electric detonators in accordance with Sections 225.45(f) and 225.45(g) on storing permissible explosives underground.
- d) The shot firer, before blasting, must:
 - 1) visually examine the roof and ribs pursuant to Sections 13.04, 30.04, and 30.05, of the Act (Ill. Rev. Stat. 1985 ch. 96 1/2, pars. 1304, 3004, 3005); and
 - 2) check for methane pursuant to Section 31.04 of the Act (Ill. Rev. Stat. 1985 ch. 96 1/2, par. 3104); and
 - 3) if, pursuant to Sections 31.04 and 31.09 of the Act (Ill. Rev. Stat. 1985 ch. 96 1/2, pars. 3104, 3109), the concentration of methane is equal to or greater than one percent;
 - A) stop work, and
 - B) notify the shot firer's supervisor.
- e) The shot firer must hang warning devices made of reflective material to warn of an impending blast. These warning devices must be placed at all approachable

areas to the blasting face. The shot firer when shooting cross cuts, must ensure all persons have been removed from the adjoining place that they are blasting towards.

- f) The shot firer must:
 - 1) keep the blasting cable shunted except when testing continuity or connecting into circuit, and
 - 2) wire the boreholes in a series circuit.However, at no time may anyone wire the legwires from one borehole to another with an exposed electric blasting cap.
- g) Before attaching to a blasting unit, which the Mine Safety and Health Administration has approved under 30 CFR 24.0-24.9 (1985) or under 30 CFR 25.1-25.13, 25.20-25.21, 25.25-25.26 (1985) the shot firer must ensure the blasting cable is shunted until ready to be checked with a galvanometer for continuity.
- h) All blasting charges must be surrounded by at least eighteen (18) inches of rock, coal, or both in all directions if the height of the coal permits.
- i) The shot firer must ensure that when the blasting cable is attached to the leg wires, the ends are either staggered or kept well separated.
- j) The shot firer must unreel the blasting cable from the face outby to a position at least fifty (50) feet and at a ninety degree (90°) angle from where the shot firer intends to blast.
- k) The shot firer must give a loud, verbal warning such as "fire in the hole" at least three (3) times before blasting.
- l) No shot firer may fire nor any supervisor order any unlawful shot.
- m) After the permissible explosives and electric detonators have detonated, the shot firer must:
 - 1) remove the blasting cable from the blasting unit;
 - 2) join the two strands of wire together (shunt); and
 - 3) after allowing sufficient time for the smoke to clear;
 - A) make an immediate examination of the roof, and ribs, pursuant to Sections 13.04, 30.04, and 30.05 (Ill. Rev. Stat. 1985 ch. 96 1/2, pars. 1304, 3004, 3005)
 - B) check for:
 - i) methane pursuant to Section 31.04 (Ill. Rev. Stat. 1985, ch. 96 1/2, par. 3104),
 - ii) carbon monoxide, and
 - iii) misfires.
- n) At the shift's end, the shot firer must:
 - 1) return all unused permissible explosives and electric detonators to the section storage magazine;
 - 2) lock the section magazine's cover; and
 - 3) keep the inventory records which 62 Ill. Adm. Code 225.47 requires.

Section 225.60 Misfires

The following apply only in the event of a misfire:

- a) The shot firer must summon the shot firer's immediate supervisor.
- b) The shot firer must wait five (5) minutes after the blast before attempting to handle the misfire.
- c) The shot firer, in the presence of the shot firer's immediate supervisor, then must:
 - 1) disconnect the blasting cable from the source of power and
 - 2) short-circuit (shunt) the battery end before the shot firer and shot firer's immediate supervisor examine the electric connections.
- d) The shot firer, in the presence of the shot firer's immediate supervisor, may only remove permissible explosives with wooden tools by either of the following two ways:
 - 1) washing the stemming and permissible explosive from the borehole with water or
 - 2) washing out the stemming and inserting and firing a new primer.
- e) If it is impractical to remove a misfire in the manner listed in Subsection (d)(1), (d)(2) then the shot firer may remove the misfire by firing a separate charge at least two (2) feet away from and in a line parallel to the misfired charge.

Section 225.70 Ventilation

- a) The quantity of air reaching the last open crosscut in any set of entries must be greater than or equal to 9,000 cubic feet per minute; if diesel equipment is used, then the quantity of air reaching the last cross-cut must meet the standards of 62 Ill. Adm. Code 220.230(g)(3).
- b) In any working face where coal is being penetrated or loaded as a result of permissible explosives, the air sweeping the work face must be greater than or equal to 3,000 cubic feet per minute at all times persons are working at the face.

Section 225.80 Certification and Training

- a) Before performing any duties as a shot firer, a person must have received training and certification from the Mining Board.
- b) The Department will issue temporary certificates valid for one year or until the next available examination is held by the Mining Board, which ever comes first
 - 1) for a person who is certified as a shot firer in another state to use permissible explosives underground to break down coal; or
 - 2) for a person whom a Department representative has trained in the use and care of permissible explosives.
- c) Any person wishing to be certified as a shot firer must show:
 - 1) possession of First Class papers;

- 2) pass an examination as to his practical and technological knowledge of:
- A) the nature and properties of mine gases,
 - B) the laws of ventilation,
 - C) the structure and the use of
 - i) safety lamps
 - ii) methane detectors, and
 - iii) carbon monoxide detectors
 - D) Sections 11.06, 13.02, 14.01-14.04, 18.05-18.06, 18.09, 19.10, 21.01-21.13, 24.01-24.06, 25.01-25.07, 31.01-31.32 of the Act. (Ill. Rev. Stat. 1985, ch. 96 1/2, pars. 1106, 1302, 1401-1404, 1805-1806, 1809, 1910, 2101-2113, 2401-2406, 2501-2507, 3101-3132).