

Virginia Administrative Code

Agency 25 - DEPARTMENT OF MINES, MINERALS AND ENERGY

Chapter 90 REGULATIONS GOVERNING THE USE OF DIESEL-POWERED EQUIPMENT IN UNDER GROUND COAL MINES

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Database updated through February 1, 2013

CHAPTER 90 REGULATIONS GOVERNING THE USE OF DIESEL-POWERED EQUIPMENT IN UNDERGROUND COAL MINES

4VAC25-90-10. Definitions.

The following words and terms when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise:

“Chief” means the Chief of the Division of Mines of the Department of Mines, Minerals and Energy.

“Division” means the Division of Mines of the Department of Mines, Minerals and Energy.

“MSHA” means the Mine Safety and Health Administration.

“TLV” or “Threshold Limit Value” means the airborne concentration of a substance that represents conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect as recommended by the American Conference of Government Industrial Hygienists.

4VAC25-90-20. Diesel equipment approval.

A. Diesel-powered equipment shall not be permitted underground without receiving approval from the chief or his designated representative. Approval will be based on:

1. Meeting the requirements of this regulation.
2. Compliance with 30 CFR Part 7 Subpart E, design and performance requirements for nonpermissible diesel-powered equipment.

Compliance with 30 CFR Part 7 Subparts E and F, and 30 CFR Part 36, requirements for permissible diesel-powered equipment.

3. An evaluation by the Division of Mines of the equipment, undiluted exhaust emissions, the adequacy of ventilation, and fire protection.

4. If an oxidation catalytic converter, a diesel particulate filter, or both, are installed on underground diesel-powered equipment they shall be installed and maintained in accordance with manufacturer's specifications.

B. If at any time the chief determines that any condition or practice permitted under this approval may threaten the health or safety of employees, additional requirements may be imposed for the purpose of eliminating the condition or practice.

C. Stationary diesel-powered equipment, portable diesel generators, diesel-powered ambulances, and diesel fire fighting equipment shall not be permitted underground without an approved plan. The plan shall address ventilation, fire protection, fuel handling, storage, and any other requirements the chief determines as necessary to protect the health and safety of miners.

D. The Division of Mines shall be notified after completion of any alterations in design, substitution of components,

and any other changes in the condition of operating diesel-powered equipment that affects emissions. Additional engine testing and adjustments shall be required as necessary should any resulting changes be made that may increase diesel emissions.

4VAC25-90-30. Operation of diesel equipment.

A. All mobile underground diesel-powered equipment shall be operated safely and shall meet the following requirements:

1. Be free of excess accumulation of coal dust, oil, grease, fuel and other combustible materials; and
2. Be operated with:
 - a. An audible warning device;
 - b. An engine start and stop mechanism;
 - c. Guards over moving components;
 - d. A proper lifting device for the rerailling of such equipment (self-propelled rail equipment only);
 - e. Sanding devices, except for personnel carriers that transport not more than five personnel (self-propelled rail equipment only);
 - f. Headlights on each end;
 - g. Park and service brakes;
 - h. A fire suppression system;
 - i. Intake and exhaust systems in good condition; and
 - j. A self closing filler cap on the fuel tank.

To avoid contact with energized trolley wires or trolley feeder wires a six-inch minimum clearance shall be maintained or the equipment shall be adequately insulated.

B. All mobile diesel-powered equipment operated in or inby the last open crosscut or in return air courses shall be permissible. Such diesel-powered equipment shall be maintained and operated in accordance with 4VAC25-90-20 and as follows:

1. Electrical component permissibility shall be maintained;
2. Emergency engine shutdown shall be operable;
3. Flame arresters (intake and exhaust) shall be provided; and
4. Low-level shutdown (water bath/scrubber) shall be operable.

C. The engine of mobile diesel-powered equipment shall not be left idling unattended.

D. The engine of any mobile diesel-powered equipment shall not be capable of starting unless the transmission

controls are in the neutral position.

E. The operation of any diesel-powered equipment in any manner or under any condition that does not comply with the requirements of this chapter shall result in a notice of violation and if not corrected within a reasonable time a closure order shall be issued that requires the machine be taken out of service until such condition or practice is corrected. Upon review of the history of violations, the chief may void the approval for use of underground diesel-powered equipment at that mine.

4VAC25-90-40. Maintenance of diesel equipment.

A. Engine intake and exhaust systems shall be inspected visually by an authorized person at least once each day that the equipment is operated.

B. Permissible and emission components of diesel-powered equipment shall be inspected weekly by a certified diesel engine mechanic in accordance with the instructions of the manufacturer and all applicable federal and state requirements.

C. All filters on diesel engines shall be maintained or replaced as recommended by the manufacturer or more often if necessary.

D. Maintenance and repair work on emission components shall be done by a certified diesel engine mechanic in accordance with the instructions of the manufacturer and all applicable federal and state requirements.

E. All diesel-powered equipment shall be equipped with an hour meter to accurately display engine run time.

F. Maintenance manuals shall be made available for review by interested persons.

G. Records shall be kept of inspections, maintenance, and repair work for at least one year and shall be made available for inspection by interested persons.

4VAC25-90-50. Ventilation of diesel equipment.

A. The ventilating air in all active areas where diesel-powered equipment is operated shall not have combustible or other contaminating gases in such concentration that may affect combustion in the diesel engine by materially increasing toxic, poisonous or other objectionable constituents in the engine exhaust.

B. The air supplied for ventilation where diesel-powered equipment is used shall contain less than 1.0% by volume of methane.

C. The minimum ventilating air quantity maintained in the last open crosscut of each working section where units of diesel-powered equipment are operated must be at least the sum of that specified on the approval plates of all the diesel-powered equipment to be operated in these areas.

D. The minimum ventilating air quantity maintained in the intake reaching the working face of each longwall and at the intake end of any pillar line where units of diesel-powered equipment are operated on the working section must be at least the sum of that specified on the approval plates of all the diesel-powered equipment to be operated in these areas.

E. The minimum ventilating air quantity for an individual unit of diesel-powered equipment being operated outby the working section shall be at least that specified on the approval plate for that equipment. Such air quantity shall be maintained:

1. In any entry where the equipment is being operated in areas of the mine developed on or after July 18, 2001;
2. In any air course with single or multiple entries where the equipment is being operated in areas of the mine developed prior to July 18, 2001; and
3. At any other location as the chief may require.

F. The quantity of ventilating air supplied to the active areas where diesel-powered equipment is operated must be adequate to dilute and carry away constituents of the engine exhaust so that the composition of the air meets the air quality standards set forth in 4VAC25-90-70.

4VAC25-90-60. Emission testing and evaluation.

Undiluted exhaust emissions of diesel engines, to include each side of a dual exhaust system, on diesel-powered equipment used in underground coal mines shall be tested and evaluated weekly by an authorized person. The mine operator shall develop and implement effective written procedures for such testing and evaluation that shall include the following:

1. The method for which a repeatable load test is conducted that must include an engine RPM reading;
2. Sampling and analytical methods used to measure diesel engine emission concentrations;
3. Instrumentation and calibration of instrumentation capable of accurately detecting carbon monoxide in the expected concentrations;
4. The method of evaluation and interpretation of sampling results;
5. The operator will establish a baseline level of diesel exhaust emissions, subject to approval by the chief based upon the average of the first four undiluted exhaust emission tests required by this section. This procedure will establish an action level not to exceed the lesser of two times the baseline or 2500 parts per million (ppm) of carbon monoxide. Should the action level be exceeded, the machine shall be removed from service and engine performance improved.
6. The maintenance of records necessary to track engine performance. These records shall be:
 - a. Recorded in a secure book that is not susceptible to alteration, or recorded electronically in a computer system that is secure and not susceptible to alteration; and
 - b. Retained at a surface location at the mine for at least one year and made available for inspection by interested persons.

4VAC25-90-70. Air quality.

A. During on-shift examinations required by § 45.1-161.209 of the Code of Virginia, a mine foreman authorized by the operator shall determine the concentration of carbon monoxide (CO) and nitrogen dioxide (NO₂).

1. In the return of each working section where diesel equipment is used in by the loading point at a location which represents the contribution of all diesel equipment on such section.
2. At a point in by the last piece of diesel equipment on a longwall or shortwall when mining equipment is being installed or removed. This examination shall be made at a time which represents the contribution of all diesel equipment used for this activity including the diesel equipment used to transport longwall or shortwall equipment to and from the section.

3. In any other area designated by the chief where diesel equipment is operated in a manner which can result in significant concentrations of diesel exhaust emissions.

4. The concentrations of carbon monoxide (CO) and nitrogen dioxide (NO₂) shall not exceed the following threshold limit values:

Threshold Limit Values (TLV)

Carbon Monoxide (CO)
25 ppm

Nitrogen Dioxide (NO₂)
3 ppm

B. Samples of CO and NO₂ shall be collected and analyzed:

1. By appropriate instrumentation that has been maintained and calibrated in accordance with the manufacturer's recommendations;
2. In a manner that makes the results available immediately to the person collecting the samples; and
3. During periods that are representative of conditions during normal operations.

C. The results of these tests shall be:

1. Recorded in a secure book that is not susceptible to alteration, or recorded electronically in a computer system that is secure and not subject to alteration; and
2. Retained at a surface location at the mine for at least one year and made available for inspection by interested persons.

4VAC25-90-80. Fire protection for diesel-powered equipment.

A. Mobile, diesel-powered equipment shall have a multipurpose dry chemical type (ABC) fire suppression system or equivalent approved system.

B. Nozzles and reservoirs shall be placed in accordance with the manufacturer's specifications to provide maximum protection to the fuel tank compartment, motor compartment, battery compartment and hydraulic tanks.

C. Stationary diesel-powered equipment must be equipped with an automatic multipurpose dry chemical type (ABC) or equivalent approved fire suppression system.

4VAC25-90-90. Fuel specifications.

A. The fuel for diesel-powered equipment approved for service in underground mines shall be low volatile hydrocarbon fuel with a flash point of 100°F or greater at standard temperature and pressure, and shall contain sulfur in a concentration of .05% or less by weight.

B. The mine operator shall maintain on the mine site and make available for inspection a statement from the diesel fuel supplier certifying the sulfur content and flash point of the diesel fuel to be used underground. This statement shall be updated annually and whenever the fuel distributor is changed.

4VAC25-90-100. Fuel use, storage, and handling.

A. Unless otherwise approved, fuel taken underground shall be transported in metal containers that have self-closing devices.

B. Fuel taken underground and awaiting transfer to diesel-powered equipment fuel tanks shall be stored in a closed compartment or container constructed of incombustible material and shall be kept in a well-ventilated location until placed in the fuel tank.

C. Fuel shall be transferred from the storage compartment to a fuel tank through a flexible hose that is fitted with a self-closing valve. This does not apply to portable containers of five gallons or less.

D. The fuel handling system and the diesel-powered equipment shall be frame grounded so that a difference in potential does not exist when fuel is being transferred from the storage compartment to the fuel tank. This does not apply to portable containers of five gallons or less.

E. The air vents on fuel handling equipment shall be flameproof. This does not apply to portable containers of five gallons or less.

F. When fuel is being transferred from a storage compartment to the diesel equipment fuel tank, the engine shall be stopped.

G. A supply of sand or other suitable incombustible material for absorbing spilled fuel shall be available during the transfer of fuel from a storage compartment to the diesel equipment fuel tank. Fuel spilled shall be cleaned up immediately.

H. In order to prevent unintentional opening, all drain plugs in the fuel handling system shall be threaded, sealed, locked, and protected in the closed position.

I. During fuel handling operations, precautions shall be taken to keep the fuel clean and free from contamination by foreign material such as dirt, sediment and water.

J. Diesel fuel storage and handling in a working section shall comply with the following:

1. Underground storage areas that exceed 100 gallons shall be vented with intake air that is coursed into a return air course or to the surface and not used to ventilate working places.

2. At least one 20-pound approved ABC type fire extinguisher and no less than 200 pounds of rock dust per 100 gallons of fuel storage shall be maintained at the designated underground mine storage area.

3. Only one temporary underground diesel fuel storage area is permitted for each working section or in each area of the mine where equipment is being installed or removed. Temporary storage areas must be located within 500 feet of the current loading point, the projected loading point where equipment is being installed, or the last loading point where equipment is being removed.

K. Temporary and permanent underground diesel fuel storage facilities must be:

1. At least 100 feet from shafts, slopes, shops, or explosive magazines;
2. At least 25 feet from trolley wires, power cables, or electrical equipment not necessary for the operation of the storage facilities or areas; and
3. In a location protected from hazards of other mobile equipment.

Storage underground shall be limited to a typical 48-hour supply not to exceed 1,000 gallons.

4VAC25-90-110. [Reserved]

4VAC25-90-120. [Repealed]

4VAC25-90-130 to 4VAC25-90-260. [Reserved]

4VAC25-90-270. [Repealed]

4VAC25-90-280 to 4VAC25-90-290. [Reserved]

4VAC25-90-300. [Repealed]

4VAC25-90-310 to 4VAC25-90-330. [Reserved]

4VAC25-90-340. [Repealed]

4VAC25-90-350. [Reserved]

4VAC25-90-360. [Repealed]

4VAC25-90-370 to 4VAC25-90-470. [Reserved]

FORMS (4VAC25-90)

Diesel Equipment Data Form, DM-DE-01 (7/1/94).

Diesel Equipment Checklist, DM-DE-02 (7/1/94).

Diesel Equipment Approval Form, DM-DE-01-S (rev. 4/01).

Request for Approval to Use Diesel Equipment, DM-DE-03 (1/1/93).
