

to MSHA as part of the approval application:

- (i) Written evidence of the laboratory's independence and current recognition by a laboratory accrediting organization;
- (ii) Complete technical explanation of how the product complies with each requirement in the applicable MSHA product approval requirements;
- (iii) Identification of components or features of the product that are critical to the safety of the product; and
- (iv) All documentation, including drawings and specifications, as submitted to the independent laboratory by the applicant and as required by this part.

(b) The application will be examined by MSHA to determine whether inspection and testing of the modified system or component or of a part will be required. MSHA will inform the applicant whether testing is required and the component or components and related material to be submitted for that purpose.

(c) If the proposed modification meets the requirements of this part, a formal extension of certification will be issued, accompanied by a list of revised drawings and specifications which MSHA has added to those already on file.

[31 FR 10607, Aug. 9, 1966, as amended at 52 FR 17515, May 8, 1987; 68 FR 36421, June 17, 2003]

§27.12 Withdrawal of certification.

MSHA reserves the right to rescind for cause any certification issued under this part.

Subpart B—Construction and Design Requirements

§27.20 Quality of material, workmanship, and design.

(a) MSHA will test only equipment that, in its opinion, is constructed of suitable materials, is of good workmanship, is based on sound engineering principles, and is safe for its intended use. Since all possible designs, arrangements, or combinations of components cannot be foreseen, MSHA reserves the right to modify the construction and design requirements of components or subassemblies and the tests to obtain

the degree of protection intended by the tests described in Subpart C of this part.

(b) Unless otherwise noted, the requirements stated in this part shall apply to explosion-proof enclosures and intrinsically safe circuits.

(c) All components, subassemblies, and assemblies shall be designed and constructed in a manner that will not create an explosion or fire hazard.

(d) All assemblies or enclosures—explosion-proof or intrinsically safe—shall be so designed that the temperatures of the external surfaces, during continuous operation, do not exceed 150 °C. (302 °F.) at any point.

(e) Lenses or globes shall be protected against damage by guards or by location.

(f) If MSHA determines that an explosion hazard can be created by breakage of a bulb having an incandescent filament, the bulb mounting shall be so constructed that the bulb will be ejected if the bulb glass enclosing the filament is broken.

NOTE: Other methods that provide equivalent protection against explosion hazards from incandescent filaments may be considered satisfactory at the discretion of MSHA.

§27.21 Methane-monitoring system.

(a) A methane-monitoring system shall be so designed that any machine or equipment, which is controlled by the system, cannot be operated unless the electrical components of the methane-monitoring system are functioning normally.

(b) A methane-monitoring system shall be rugged in construction so that its operation will not be affected by vibration or physical shock, such as normally encountered in mining operations.

(c) Insulating materials that give off flammable or explosive gases when decomposed shall not be used within enclosures where they might be subjected to destructive electrical action.

(d) An enclosure shall be equipped with a lock, seal, or acceptable equivalent when MSHA deems such protection necessary for safety.

(e) A component or subassembly of a methane-monitoring system shall be constructed as a package unit or otherwise in a manner acceptable to MSHA. Such components or subassemblies

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shall be readily replaceable or removable without creating an ignition hazard.

(f) The complete system shall "fail safe" in a manner acceptable to MSHA.

§ 27.22 Methane detector component.

(a) A methane detector component shall be suitably constructed for incorporation in or with permissible and approved equipment that is operated in gassy mines and tunnels.

(b) A methane detector shall include:

(1) A method of continuous sampling of the atmosphere in which it functions.

(2) A method for actuating a warning device which shall function automatically at a methane content of the mine atmosphere between 1.0 to 1.5 volume percent. The warning device shall also function automatically at all higher concentrations of methane in the mine atmosphere.

(3) A method for actuating a power-shutoff component, which shall function automatically when the methane content of the mine atmosphere is 2.0 volume percent and at all higher concentrations of methane.

(4) A suitable filter on the sampling intake to prevent dust and moisture from entering and interfering with normal operation.

NOTE: This requirement for the methane detector may be waived if the design is such as to preclude the need of a filter.

(c) A methane detector may provide means for sampling at more than one point; provided, the methane detector shall separately detect the methane in the atmosphere at each sampling point with, in MSHA's opinion, sufficient frequency.

§ 27.23 Automatic warning device.

(a) An automatic warning device shall be suitably constructed for incorporation in or with permissible and approved equipment that is operated in gassy mines and tunnels.

(b) An automatic warning device shall include an alarm signal (audible or colored light), which shall be made to function automatically at a methane content of the mine atmosphere between 1.0 to 1.5 volume percent and at all higher concentrations of methane.

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(c) It is recommended that the automatic warning device be supplemented by a meter calibrated in volume percent of methane.

§ 27.24 Power-shutoff component.

(a) A power-shutoff component shall be suitably constructed for incorporation in or with permissible and approved equipment that is operated in gassy mines and tunnels.

(b) The power-shutoff component shall include:

(1) A means which shall be made to function automatically to deenergize the machine or equipment when actuated by the methane detector at a methane concentration of 2.0 volume percent and at all higher concentrations in the mine atmosphere.

(i) For an electric-powered machine or equipment energized by means of a trailing cable, the power-shutoff component shall, when actuated by the methane detector, cause a control circuit to shut down the machine or equipment on which it is installed; or it shall cause a control circuit to deenergize both the machine or equipment and the trailing cable.

NOTE: It is not necessary that power be controlled both at the machine and at the outby end of the trailing cable.

(ii) For a battery-powered machine or equipment, the methane-monitor power-shutoff component shall, when actuated by the methane detector, cause a control circuit to deenergize the machine or equipment as near as possible to the battery terminals.

(iii) For a diesel-powered machine or equipment, the power-shutoff component, when actuated by the methane detector, shall shut down the prime mover and deenergize all electrical components of the machine or equipment. Batteries are to be disconnected as near as possible to the battery terminals. Headlights which are approved under Part 20 of this subchapter (Schedule 10, or any revision thereof) are specifically exempted from this requirement.

(2) An arrangement for testing the power-shutoff characteristic to determine whether the power-shutoff component is functioning properly.