

§ 27.33

(b) *Field tests.* MSHA reserves the right to conduct tests, similar to those stated in paragraph (a) of this section, in underground workings to verify reliability and durability of a methane-monitoring system installed in connection with a piece of mining equipment.

§ 27.33 Test to determine explosion-proof construction.

Any assembly, subassembly, or component which, in the opinion of MSHA, requires explosion-proof construction shall be tested in accordance with the procedures stated in Part 18 of this subchapter.

§ 27.34 Test for intrinsic safety.

Assemblies, subassemblies, or components that are designed for intrinsic safety shall be tested by introducing into the circuit(s) thereof a circuit-interrupting device which produces an electric spark from the current in the circuit. The circuit-interrupting device shall be placed in a gallery containing various flammable natural gas-air mixtures. To meet the requirements of this test, the spark shall not ignite the flammable mixture. For this test the circuit-interrupting device shall be operated not less than 100 times at 125 percent of the normal operating voltage of the particular circuit.

§ 27.35 Tests to determine life of critical components and subassemblies.

Replaceable components may be subjected to appropriate life tests at the discretion of MSHA.

§ 27.36 Test for adequacy of electrical insulation and clearances.

MSHA shall examine, and test in a manner it deems suitable, electrical insulation and clearances between electrical conductors to determine adequacy for the intended service.

§ 27.37 Tests to determine adequacy of safety devices for bulbs.

The glass envelope of bulbs with the filament incandescent at normal operating voltage shall be broken in flammable methane-air or natural gas-air mixtures in a gallery to determine that the safety device will prevent ignition of the flammable mixtures.

30 CFR Ch. I (7-1-02 Edition)

§ 27.38 Tests to determine adequacy of windows and lenses.

Impact tests. A 4-pound cylindrical weight with a one-inch diameter hemispherical striking surface will be dropped (free fall) to strike the window or lens in its mounting or the equivalent thereof at or near the center. At least three out of four samples shall withstand the impact according to the following table:

Overall lens diameter (inches)	Height of fall (inches)
Less than 4	6
4 to 5	9
5 to 6	15
Greater than 6	24

Lenses or windows of smaller diameter than 1 inch may be tested by alternate methods at the discretion of MSHA.

§ 27.39 Tests to determine resistance to vibration.

(a) *Laboratory tests for reliability and durability.* Components, subassemblies, or assemblies that are to be mounted on permissible and approved equipment shall be subjected to two separate vibration tests, each of one-hour duration. The first test shall be conducted at a frequency of 30 cycles per second with a total movement per cycle of 1/16-inch. The second test shall be conducted at a frequency of 15 cycles per second with a total movement per cycle of 1/8-inch. Components, subassemblies, and assemblies shall be secured to the vibration testing equipment in their normal operating positions (with shock mounts, if regularly provided with shock mounts). Each component, subassembly and assembly shall function normally during and after each vibration test.

NOTE: The vibrating equipment is designed to impart a circular motion in a plane inclined 45° to the vertical or horizontal.

(b) *Field tests.* MSHA reserves the right to conduct tests to determine resistance to vibration in underground workings to verify the reliability and durability of a methane-monitoring system or component(s) thereof where installed in connection with a piece of mining equipment.