

## § 7.28

cloth around the rod and clamping each end and the center. The brattice cloth must hang 4 inches from the gallery floor.

(4) Use a front exhaust system to remove smoke escaping from the gallery. The exhaust system must remain on during all testing, but not affect the air flow in the gallery.

(5) Set the methane-fueled impinged jet burner to yield a flame height of 12 inches as measured at the outermost tip of the flame.

(6) Apply the burner to the front lower edge of the brattice cloth and keep it in contact with the material for 25 seconds or until 1 foot of material, measured horizontally, is consumed, whichever occurs first. If the material shrinks during application of the burner flame, move the burner flame to maintain contact with 1 foot of the material. If melting material might clog the burner orifices, rotate the burner slightly during application of the flame.

(7) Test 3 samples in still air and 3 samples with an average of 125 ft./min. of air flowing past the sample.

(8) Record the propagation length and duration of burning for each of the 6 samples. The duration of burning is the total burning time of the specimen during the flame test. This includes the burn time of any material that falls on the floor of the test gallery during the igniting period. However, the suspended specimen is considered burning only after the burner is removed. Should the burning time of a suspended specimen and a specimen on the floor coincide, count the coinciding burning time only once.

(9) Calculate the average duration of burning for the first 3 samples (still air) and the second 3 samples (125 ft./min. air flow).

(b) *Acceptable performance.* The brattice cloth shall meet each of the following criteria:

(1) Flame propagation of less than 4 feet in each of the six tests.

(2) An average duration of burning of less than 1 minute in both groups of three tests.

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(3) A duration of burning not exceeding two minutes in each of the six tests.

[53 FR 23500, June 22, 1988, as amended at 60 FR 33723, June 29, 1995]

### § 7.28 Test for flame resistance of rigid ventilation tubing.

(a) *Test procedures.* (1) Prepare 6 samples of ventilation tubing 48 inches in length with all flared or thickened ends removed. Any sample with a cross-sectional dimension greater than 24 inches must be tested in a 24-inch size.

(2) For each test, suspend the sample in the center of the gallery by running a wire through the 48-inch length of tubing.

(3) Use a front exhaust system to remove smoke escaping from the gallery. The exhaust system must remain on during all testing but not affect the air flow in the gallery.

(4) Set the methane-fueled impinged jet burner to yield a flame height of 12 inches as measured at the outermost tip of the flame.

(5) Apply the burner to the front lower edge of the tubing so that two-thirds of the burner is under the tubing and the remaining third is exposed to allow the flames to curl onto the inside of the tubing. Keep the burner in contact with the material for 60 seconds. If melting material might clog the burner orifices, rotate the burner slightly during application of the flame.

(6) Test 3 samples in still air and 3 samples with an average of 125 ft./min. of air flowing past the sample.

(7) Record the propagation length and duration of burning for each of the 6 samples. The duration of burn is the total burning time of the specimen during the flame test. This includes the burning time of any material that falls on the floor of the test gallery during the igniting period. However, the suspended specimen is considered burning only after the burner is removed. Should the burning time of a suspended specimen and a specimen on the floor coincide, count the coinciding burn time only once.

(8) Calculate the average duration of burning for the first 3 samples (still air) and the second 3 samples (125 ft./min. air flow).

(b) *Acceptable performance.* The ventilation tubing shall meet each of the following criteria:

(1) Flame propagation of less than 4 feet in each of the 6 tests.

(2) An average duration of burning of less than 1 minute in both groups of 3 tests.

(3) A duration of burning not exceeding 2 minutes in each of the 6 tests.

[53 FR 23500, June 22, 1988, as amended at 60 FR 33723, June 29, 1995]

**§ 7.29 Approval marking.**

(a) Approved brattice cloth shall be legibly and permanently marked with the assigned MSHA approval number at intervals not exceeding ten feet. If the nature of the material or method of processing makes such marking impractical, permanent paint or ink may be used to mark the edge with an MSHA-assigned color code.

(b) Approved ventilation tubing shall be legibly and permanently marked on each section with the assigned MSHA approval number.

(c) An approved product shall be marketed only under a brand or trade name that has been furnished to MSHA.

**§ 7.30 Post-approval product audit.**

Upon request by MSHA but no more than once a year except for cause, the approval-holder shall supply to MSHA at no cost up to fifty feet of each approved design of brattice cloth and ventilation tubing for audit.

**§ 7.31 New technology.**

MSHA may approve brattice cloth and ventilation tubing that incorporates technology for which the requirements of this subpart are not applicable, if the Agency determines that the product is as safe as those which meet the requirements of this subpart.

**Subpart C—Battery Assemblies**

**§ 7.41 Purpose and effective date.**

This subpart establishes the specific requirements for MSHA approval of battery assemblies intended for incorporation in approved equipment in underground mines. It is effective August 22, 1988. Applications for approval or

extensions of approval submitted after August 22, 1989, shall meet the requirements of this part.

**§ 7.42 Definitions.**

The following definitions apply in this subpart:

*Battery assembly.* A unit or units consisting of cells and their electrical connections, assembled in a battery box or boxes with covers.

*Battery box.* The exterior sides, bottom, and connector receptacle compartment, if any, of a battery assembly, excluding internal partitions.

**§ 7.43 Application requirements.**

(a) An application for approval of a battery assembly shall contain sufficient information to document compliance with the technical requirements of this subpart and include a composite drawing with the following information:

(1) Overall dimensions of the battery assembly, including the minimum distance from the underside of the cover to the top of the terminals and caps.

(2) Composition and thicknesses of the battery box and cover.

(3) Provision for securing covers.

(4) Documentation of flame-resistance of insulating materials and cables.

(5) Number, type, and rating of the battery cells.

(6) Diagram of battery connections between cells and between battery boxes, except when connections between battery boxes are a part of the machine's electrical system.

(7) Total weight of the battery, charged and ready for service.

(8) Documentation of materials and configurations for battery cells, intercell connectors, filler caps, and battery top:

(i) If nonmetallic cover designs are used with cover support blocks; or

(ii) If the cover comes into contact with any portion of the cells, caps, filler material, battery top, or intercell connectors during the impact test specified by § 7.46.

(b) All drawings shall be titled, dated, numbered, and include the latest revision number.

[53 FR 23500, June 22, 1988, as amended at 60 FR 33723, June 29, 1995]