

1.0 PURPOSE

This test procedure is used by the Electrical Safety Division (ESD) to determine if representative samples of a cord and cord armor used in a miner’s cap lamp assembly meet the requirements of 30 CFR 19.6(a)(6).

2.0 SCOPE

This Standard Test Procedure (STP) applies to the cord and cord armor of a miner’s cap lamp submitted for approval under 30 CFR Part 19.

3.0 REFERENCES

30 CFR 19.6(a)(6): Specific requirements for approval

The suitability of the materials and the construction shall be determined ... by durability tests of the cord and cord armor² and...

²Ten cords, assembled with the cord armor and outlet of the lamp with which it is to be used, are slatted at least 100,000 times through an arc of 50 degrees at approximately 90 slattings per minute.

4.0 DEFINITIONS

4.1. Cord - The insulated electrical conductors connecting the headpiece to the battery.

4.2. Cord Armor - The outside jacket of the cord covering the conductors and any strain relief components.

4.3. Cord Slat - The movement of the cap lamp cord back and forth through an arc of 50° as measured $\pm 25^\circ$ from an axis defined by the cord exiting the cap lamp battery top and headpiece assembly.

4.4. Cord Slat Test Apparatus - A device used to move the cord through the specified arc.

5.0 TEST EQUIPMENT

5.1. Slat test apparatus.

5.2. Device to count the number of cycles of the slat test apparatus.

5.3. Ohmmeter with a minimum resolution of 0.001 ohm.

6.0 TEST SAMPLES

- 6.1. Five headpiece assemblies including cord with armor. These samples are to be in their proposed marketable form.
- 6.2. Five battery top assemblies including cord with armor. These samples are to be in their proposed marketable form.

7.0 PROCEDURES

- 7.1. Measure and record the dc resistance in milliohms of each conductor in the headpiece cable assembly cord being tested.
- 7.2. Position the headpiece cable assembly in the slat test apparatus so that the cord at the headpiece entrance will be moved back and forth through an arc of 50° as measured $\pm 25^\circ$ from an axis defined by the cord exiting the cap lamp assembly.
- 7.3. Set the speed of the slat test apparatus to 90 slattings per minute.
- 7.4. Test for a total of 100,000 slattings (18 hours, 32 minutes).
- 7.5. Measure and record the dc resistance in milliohms of each conductor in the cord being tested.
- 7.6. Inspect the cord and armor for damage and record.
- 7.7. Repeat steps 7.1 through 7.6 on the four additional samples of the headpiece cable assemblies.
- 7.8. Measure and record the dc resistance in milliohms of each conductor in the battery top cable assembly cord being tested.
- 7.9. Position the battery top cable assembly in the slat test apparatus so that the cord at the battery top entrance will be moved back and forth through an arc of 50° as measured $\pm 25^\circ$ from an axis defined by the cord exiting the cap lamp assembly.
- 7.10. Perform steps 7.3 through 7.6 for the battery top cable assembly.
- 7.11. Repeat steps 7.8 through 7.10 on the four additional samples of the battery top cable assemblies.

8.0 TEST DATA

- 8.1. Manufacturer and model number of the cap lamp.
- 8.2. Sample number.
- 8.3. Cord resistance, pretest, and post test resistance in milliohms of each conductor in the cord.
- 8.4. Comments on the visual observation of the condition of the cord insulation, jacket, and armor.
- 8.5. Test equipment used in conducting the test with the calibration due dates.

9.0 PASS/FAIL CRITERIA

- 9.1. The insulation and cord armor shall not crack or fray.
- 9.2. The resistance of each conductor shall not increase by more than 1000% of pretest value.