

**1.0 PURPOSE**

To identify areas of the Code of Federal Regulations Title 30 (30CFR) Part 7, Subpart K, that requires clarification, in order to conduct consistent and appropriate flame testing.

**2.0 SCOPE**

30CFR Part 7, Subpart K.

**3.0 REFERENCES**

Title 30, Code of Federal Regulations.

**4.0 DEFINITIONS**

No items need defined.

**5.0 TEST EQUIPMENT**

As listed in 30CFR Part 7.406.

**6.0 TEST SAMPLES**

Samples are described in 30CFR Parts 7.407 and 7.408, with the following modification. The test samples need not be humidity conditioned. A "Memorandum for the Record" dated July 18, 2005, and signed by Kenneth Sproul, Chief, Quality Assurance/Materials Testing Division, explains why humidity conditioning is not necessary. A copy of the memorandum is attached as "Appendix 1."

**7.0 PROCEDURES**

As listed in 30CFR Parts 7.407 and 7.408.

**8.0 TEST DATA**

Test data from the applicant will be maintained with the applicant's approval file; test data from a product audit will be maintained with the audit file.

**9.0 PASS/FAIL CRITERIA**

30CFR Parts 7.407 and 7.408 list the pass/fail criteria.

U.S. Department of Labor

Mine Safety and Health Administration  
Industrial Park Road  
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Triadelphia, West Virginia 26059



July 18, 2005

MEMORANDUM FOR THE RECORD

FROM:

KENNETH A. SPROUL

SUBJECT:

Justification for modifying Part 7 cable conditioning

An "Internal Review," dated April 25, 2004, of the 30CFR Part 7 electrical cable auditing testing procedure reported that the cable samples being tested had not been conditioned within the humidity range specified in 30CFR Part 7 and that these humidity conditions were not maintained during the course of the testing.

This paper will explain why the cables were not conditioned and tested in the humidity range specified and why it was not crucial to the test results.

Establishing environmental testing conditions for materials is good laboratory practice for many reasons. In this case, 2<sup>nd</sup> and 3<sup>rd</sup> party labs conduct the flame tests that are used for issuing the MSHA approval and MSHA conducts post approval testing of these cables under the product audit program. Standard test conditions between the test labs is important to confirm the flame resistance of the approved cable. However, humidity is not considered critical to the environmental conditioning of the jacket materials used on present day cables as the jacket materials now in use do not absorb moisture. And the cost to expose the cables to a specific humidity range and conduct the testing in the same humidity environment would be very expensive and not justified.

The relative humidity listed in 30CFR Part 7.408(a)(2), (45% to 65%), was specified based upon what the authors of this part considered as a typical humidity range inside a testing laboratory. It was an estimate based upon typical laboratory conditions. They believed this to be necessary because a few of the older types of cable jacket materials in use during that time may be able to absorb moisture and therefore, adversely affect flame test results. Although not a critical concern because the amount of absorption of these materials would be minimal, the authors' intent was to eliminate the extreme possibility of cables being soaked by being left out in the weather or lying in pools of water, etc. prior to testing being conducted

However, since the time 30CFR Subpart K was written, the types of cable jacket materials being used do not absorb water. In fact, probably none of the older water absorption types accepted under 30CFR Part 18 were issued a 30CFR Part 7 approval.

30CFR Part 7.411 "New Technology" allows MSHA to consider for approval, cable products for which the existing requirements of 30CFR Subpart K are not applicable. It is under this authority that MSHA (as well as the 2<sup>nd</sup> & 3<sup>rd</sup> party testing laboratories) is conducting flame testing on electrical cables that were maintained inside a testing laboratory whose humidity may have been outside the specified humidity range

The humidity range listed in 30CFR Part 7.408(a)(2) was specified to eliminate extreme conditions. Occasionally, the humidity inside of testing laboratories may vary outside these parameters. However, based upon the type of product being tested (electrical cables) and the water resistant cable jacket materials now exclusively used, this parameter isn't considered crucial to the flame test results of cables. The expense of constructing and maintaining an environmental chamber is not necessary.