Title/Subject: Standard Test Procedure for Measurement of Wall Thickness of Hose Conduit, 30 CFR, Part 18		
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Original Issue Date: 1/01/85	Follow-Up Review Date: 9/01/07	Revision Date: 8/31/04
Signature/Initial: Steven J. Luzik, Chief, Approval and Certification Center		

Standard Test Procedure for Measurement of Wall Thickness of Hose Conduit, 30 CFR, Part 18

1.0 Purpose:

1.1 This document establishes MSHA's Standard Test Procedure (STP) for Measurement of Wall thickness of Hose Conduit, 30 CFR Part 18. Information regarding the test instrument was extracted from ASTM D374-79 and the RMA ISO DP4671 for the technical aspects of making hose thickness measurements.

1.2 The purpose of the test is to describe the test procedures used to take wall thickness measurements of hose conduit used in underground mines.

2.0 Scope:

1.3 The Quality Assurance and Materials Testing Division, Approval and Certification Center conduct the Hose Conduit Wall Thickness Measurement Test.

3.0 Reference:

3.1 This document supersedes CDS document ASTP4012 (dated: 1/01/85).

3.2 30 CFR, Part 18, Section 18.39.

3.3 ASTM D374-79 - Standard Test Methods for Thickness of Solid Electrical Insulation.

3.4 ISO 4671 - Rubber and Plastic Hoses and Hose Assemblies – Methods of Measurement of Dimensions.

4.0 Test Instrument:

4.1 A micrometer as indicated in Section 4, ASTM D374-79 (Standard Test Methods for Thickness of Solid Electrical Insulation) and having a ball attachment and calibration markings in inches, readable to four decimal places should be used.

5.0 Sample Size:

5.1 A three-foot sample of the hose conduit (submitted by the applicant) should be used for wall thickness measurement.

6.0 Sample Preparation:

6.1 The three-foot sample should be cut in two 1-1/2 foot sections and wiped free of loose particles.

7.0 Sample Measurement: (See: Appendix A for schematic)

7.1 The sample should be measured at three locations:

7.1.1 A measurement should be made at each end of the hose conduit prior to cutting. The measurement should be made ½-inch (12.7 mm) back from the ends of the hose.

7.1.2 A measurement should be made ½-inch (12.7 mm) back from the end of one hose section after cutting it in half.

7.2 Eight readings, symmetrically spaced around the circumference, should be taken for hoses of 1-1/2" or less in diameter at each measurement location. For hoses from 1-1/2" to 3" in diameter, 16 readings should be taken at each measurement location. The readings should begin at the point where the hose wall appears to be the thinnest, by visual observation. For small diameter hose, it may be necessary to split the sample to insert the micrometer jaws.

7.3 The micrometer jaws should be opened wide enough to freely insert the sample, then closed slowly using the friction sleeve until it slips and the reading does not change. The ball attachment should be placed against the inside of the hose.

7.4 Record each reading on the hose conduit wall thickness test form (See Appendix B) to four decimal places after subtracting 0.2000 for the ball attachment. Indicate the minimum thickness reading and calculate the overall average thickness from the sum of all the measurements.

8.0 Precision of Method:

8.1 The precision of this method is considered to be limited to 0.0075 inch due to possible squeezing of sample, presence of dust particles and accuracy of the micrometer.

9.0 Interpretation of Test Data:

9.1 The hose conduit should be deemed in compliance with the wall thickness criteria of CFR 30, Part 18, Section 18.39 (3/16" = 0.18750 inch minimum) if the overall average measurement is not less than 0.1800 (0.1875 - 0.0075) inches. However, if the test data show the hose sample is not uniformly round (concentric) and at least one (1) measurement in each of the three (3) sample measurement locations is less than 0.1800 (0.1875 - 0.0075) inches, the hose should be considered as not being in compliance with Section 18.39 (3/16" inch minimum).

10.0 Test Date Record:

10.1 A photograph of the conduit sample showing measurement locations (A, B, C) should be taken for documentation. The test data on the conduit sample is recorded on the laboratory data sheet shown in the Appendix B. The data sheet and photograph are then included in the record files.

11.0 Test Modifications:

11.1 Since all possible materials / products, compositions, physical properties, and applicable methods cannot be foreseen, MSHA reserves the right to modify the above test procedures.

11.0 Responsibility:

11.1 The Quality Assurance and Materials Testing Division is responsible for the maintenance and operation of the Hose Conduit Measurement of Wall Thickness Test.

12.0 Notification:

12.1 The Quality Assurance and Materials Testing Division will notify all appropriate Approval and Certification Center personnel.

13.0 Distribute:

13.1 This document will be distributed to all appropriate Approval and Certification Center personnel.

14.0 Results:

14.1 Test results are summarized in MSHA's approval and audit documentation files of the products tested. Test results regarding accident and other investigations requiring MSHA's Hose Conduit Measurement of Wall Thickness Test will be summarized where appropriate.

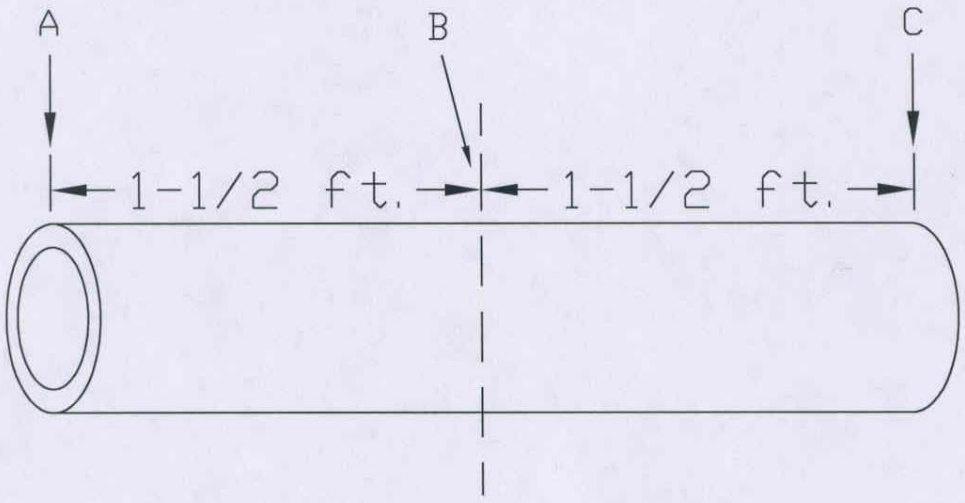
15.0 Review:

15.1 This document will be reviewed at least once every three years.

16.0 Authority:

16.1 Title 30, Code of Federal Regulations, Part 18, Section 18.39.

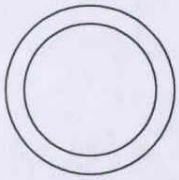
APPENDIX A - Schematic of Sample Measurement



Cut Section

8 Measurements

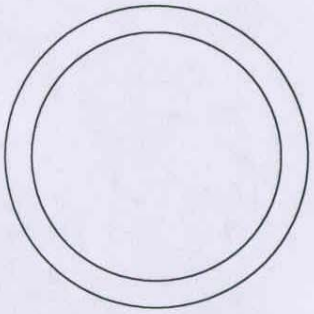
Symmetrically Spaced
for Each Measurement Location



Hose of 1-1/2 inch diameter or less

16 Measurements

Symmetrically Spaced
for Each Measurement Location



Hose of 1-1/2 inch or greater

Appendix B

Hose Conduit
Measurement of Wall Thickness Test Sheet

Micrometer with ball attachment used for measurement.
Investigator: _____ PAR No. _____
Date: _____ Manufacturer: _____
Product Trade Name: _____
Hose Conduit Diameter: _____
Description: _____
_____

Location	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Minimum Reading
A																	
B																	
C																	

Pass/Fail Criteria: Overall average should not be less than 0.1800” nor should three readings (one at each location) be less than 0.1800”.

This test sheet is to be included in the applicant folder.

Document Information Form

CDS No. ASTP5008 ____Enter (Original)
(RCO Assigns) ____Supersede CDS No.: ASTP4012 (dated 1/01/85)
____ Revise CDS No

Title: MSHA's Standard Test Procedure for Measurement of Wall Thickness of Hose Conduit, 30 CFR, Part 18

Category: __XX__ A (PAR related) ____ N (Not PAR related)

Type: __STP__ (POL, SAP, SOP, STP, LEG, INF, CRI)

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Division/Center Contact: Ken Sproul

Document is For: List of 30 CFR References:

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	Yes	No
AED	___	___
ESD	___	___
M&ESD	___	___
QA&MTD	___	___

Authorized By: _____ _____
Name A&CC Chief or Designate Date