

Colorado Procedure – Laboratory 5301-20

Standard Method of Test for

Leak Wipe Procedure for Nuclear Gauges

1. SCOPE

- 1.1 The Colorado Department of Public Health & Environment requires that all nuclear gauges be leak wiped. This condition within Colorado Department of Transportation Radioactive Materials License is set forth to enable the licensee to detect the presence of removable radioactive contamination. Leak wipes will also be performed if a nuclear gauge has been involved in an accident or if any CDOT personnel possess an unexplainably high radioactive exposure on their personnel dosimeters.

2. APPARATUS

- 2.1 Leak Test Wipes Report, provided by Staff Materials – Nuclear Lab.
- 2.2 Leak Test Envelope, CDOT Form 549, provided by Staff Materials – Nuclear Lab.
- 2.3 Filter Paper, 1 Qualitative, 4.25 cm Circles.
- 2.4 Forceps.
- 2.5 Dowel, 1/4" to 3/8", or an unused standard size pencil (19/64") with an attached eraser.
- 2.6 Nuclear M/D or AC gauge.

3. WIPING OF MOISTURE/DENSITY GAUGES

- 3.1 Complete the information requested on the Leak Test Envelope. Write the equipment's Gauge No. and CDOT No. on the envelope. Place an X in the M/D Gauge block. Write the corresponding Wipe No. from the Leak Test Wipe Report on the envelope and write the appropriate date on both the report and the envelope.
- 3.2 Remove the scaler from the gauge.
- 3.3 Clasp the edge of one filter paper in the forceps. From this point on the filter paper should not be touched, possibly contaminating yourself.
- 3.4 With the forceps in one hand and the dowel (or eraser end of a pencil) in the other hand, press the filter paper on and around the edges of the CAUTION RADIOACTIVE MATERIAL label and rub.
- 3.5 The Americium 241:Beryllium source has now been wiped so as to collect any possible Alpha radioactive contamination.
- 3.6 Turn the gauge on its side with the base facing away from you. The gauge should be in the safe position and you should have maintained hold of the forceps.

- 3.7 Following the same procedure of holding the forceps and the dowel (or eraser end of a pencil) press the dirty side* of the filter paper within the scraper ring. Press firmly and rub both the brass ring and the exposed tungsten block.

Note 1: The dirty side of the filter paper is the side that has already made contact with the AM-241:BE source.

- 3.8 The Cesium 137 source has now been wiped to collect any possible Beta radioactive contamination.
- 3.9 Place the filter paper in the Leak Test Envelope by holding the envelope open and releasing the filter paper from the forceps.
- 3.10 Seal the envelope to prevent possible loss of the filter paper.
- 3.11 Replace the scaler, ensuring that the ribbon cable is fully attached.
- 3.12 Inspect the gauge to ensure that it is in full compliance with all labeling requirements and perform any maintenance / repairs that are necessary.

4. WIPING OF ASPHALT CONTENT GAUGES

- 4.1 Complete the information requested on the Leak Test Envelope. Write the equipment's Gauge No. and CDOT No. on the envelope. Place an X in the AC Gauge block. Write the corresponding Wipe No. from the Leak Test Wipe Report on the envelope and write the appropriate date on both the report and the envelope.
- 4.2 Open the door on the gauge.
- 4.3 Clasp the edge of one filter paper in the forceps. From this point on the filter paper should not be touched, possibly contaminating yourself.
- 4.4 With the forceps in one hand and the dowel (or eraser end of a pencil) in your other hand, press the filter paper in the round indentation on the inside top plate within the sample chamber and rub.
- 4.5 The Americium 241:Beryllium source has now been wiped to collect any possible Alpha radioactive contamination. The wiping is done at this location because no polyethylene and cadmium shielding exist at this point.
- 4.6 Place the filter paper in the Leak Test Envelope by holding the envelope open and releasing the filter paper from the forceps.
- 4.7 Seal the envelope to prevent possible loss of the filter paper.
- 4.8 Inspect the gauge to ensure that it is in full compliance with all labeling requirements and perform any maintenance / repairs that are necessary.

5. LEAK TEST WIPE ANALYSIS

5.1 The completed Leak Test Wipes Report and all Leak Test Envelopes shall be forwarded to Staff Materials – Nuclear Lab for analysis.



COLORADO
Department of Transportation

LEAK TEST ENVELOPE

Gauge no.	Wipe no.
CDOT no.	Date
<input type="checkbox"/> M/D Gauge (AM-241:BE/CS-137)	
<input type="checkbox"/> AC Gauge (AM-241:BE)	

CDOT Form #549
1/20

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