



National Institute for Occupational Safety and Health
National Personal Protective Technology Laboratory
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Procedure No. CVB-APR-STP-0085

Revision: 0.0

Date: 23 March 2020

DETERMINATION OF LOW FLOW WARNING DEVICE SOUND LEVEL ON POWERED AIR
PURIFYING RESPIRATOR (PAPR), SERIES PAPR100,
STANDARD TESTING PROCEDURE (STP)

1. PURPOSE

This test establishes the method for ensuring that the level of protection provided by the Low Flow Warning Devices Sound Level, series PAPR100, meet the minimum requirements set forth in 42 CFR, Part 84, Subpart K, Section 84.171(j)(6).

2. GENERAL

This STP describes the Determination of Low Flow Warning Device Sound Level on PAPR100s test procedure in sufficient detail that a person knowledgeable in the appropriate technical field can select equipment with the necessary resolution, conduct the test, and determine whether or not the product passes the test.

3. EQUIPMENT/MATERIAL

3.1. The list of necessary test equipment and materials follows:

3.1.1. Noise Dosimeter-- Quest Technologies Noise Pro Series Dosimeter For OSHA use, the dosimeter must have a 5 dB exchange rate, use a 90 dBA criterion level, be set at slow response, and use either an 80 dBA or 90 dBA threshold gate, or a dosimeter that has both capabilities, whichever is appropriate for the evaluation.

3.1.2. Lifesize mannequin.

4. TESTING REQUIREMENTS AND CONDITIONS

4.1. Prior to beginning any testing, confirm that all measuring equipment employed has been calibrated in accordance with the testing laboratory's calibration procedure and schedule. All measuring equipment utilized for this testing must have been calibrated using a method traceable to recognized international standards when available.

4.2. Noise level test must be performed in a location that has a maximum background noise level of no more than 60 dBA.

5. PROCEDURE

5.1. Position the microphones of the Quest NoisePro Dosimeter on each ear of the mannequin. Following the respirator manufacturer's instructions, mount the respirator assembly onto the mannequin.

- 5.2. Turn PAPR system on and follow the low flow user check, in user manual instructions, to activate the audible alarm.
- 5.3. Take and record five measurements at the mannequin's ear locations.
- 5.4. Data Analysis
 - 5.4.1. Average the five readings taken from the left ear.
 - 5.4.2. Average the five readings taken from the right ear.
 - 5.4.3. Average the Left Ear Average and Right Ear Average to get the Overall Average.
6. PASS/FAIL CRITERIA
 - 6.1. The requirement for passing this test is set forth in 42 CFR Part 84, Subpart K, Section 84.171(j)(6).
 - 6.2. If the warning provided is audible only, the minimum sound level must be 80 dBA.
 - 6.3. This test should be done on a minimum of two respirators.
7. RECORDS/TEST SHEETS
 - 7.1. All test data collected will be recorded on the appropriate Determination of Minimum Sound Level for Low Flow Warning Device on PAPR100 Test Data Sheet.
8. ATTACHMENTS
 - 8.1. Example Data Sheet
 - 8.2. Photograph – Mannequin Wearing Sound Meters

8.1. Example Data Sheet

**Determination of Minimum Sound Level for Low Flow Warning Device “On”
PAPR100 Test Data Sheet**

Project No.: _____ Date: _____

Company: _____

Respirator Type: _____

Reference: 42 CFR, Part 84, Subpart K, Section 84.171(j)(6)

Requirement: The average sound level at both ears must be greater than 80 dBA.

Procedure: The respirator is mounted on a mannequin. Five sound level measurements are taken at each ear and averaged. The results for the left and right ears are then averaged to arrive at an overall test average.

Results:

Background Noise: _____ dBA

Unit # 1:	<u>Left Ear\</u> dBA	<u>Right Ear\</u> dBA	Unit # 2:	<u>Left Ear\</u> dBA	<u>Right Ear\</u> dBA
1.	_____	_____		_____	_____
2.	_____	_____		_____	_____
3.	_____	_____		_____	_____
4.	_____	_____		_____	_____
5.	_____	_____		_____	_____

Left Ear Average: _____

Right Ear Average: _____

Overall Average: _____

Comments:

Test Engineer: _____ PASS _____ FAIL _____

8.2. Photograph of Sound Test Mannequin Wearing Sound Level Meters



Revision History

Revision	Date	Reason for Revision
0.0	23 March 2020	Original release