- (3) The test aerosol will contain 50–60 milligrams of 99+ percent free silica per cubic meter of air.
- (4) The particle size distribution of the test suspension will have a geometric mean diameter of 0.4 to 0.6 micrometer, with a standard geometric deviation less than 2.
- (5) Front-mounted, back-mounted, and chin-style gas mask pesticide respirators and chemical cartridge pesticide respirators will be tested for 90 minutes and powered air-purifying respirators will be tested for 4 hours.

(d) *Lead fume test*. Three completely assembled pesticide respirators will be tested with a mechanical-testing

apparatus as follows:

- (1) Continuous airflow through the respirator will be 32 liters per minute for front-mounted, back-mounted, and chin-style gas mask pesticide respirators and chemical cartridge pesticide respirators and not less than 115 liters (4 cubic feet) per minute, for powered air-purifying respirators with tight-fitting facepieces, and not less than 170 liters (6 cubic feet) per minute for powered air-purifying respirators with loose-fitting hoods and helmets.
- (2) The test aerosol will contain 15–20 milligrams of freshly generated lead-oxide fume, calculated as lead, per cubic meter of air.
- (3) The fume will be generated by impinging an oxygen-gas flame on molten lead.
- (4) Front-mounted, back-mounted, and chin-style gas mask pesticide respirators and chemical cartridge pesticide respirators will be tested for 90 minutes and powered air-purifying pesticide respirators will be tested for 4 hours.
- (5) The total amount of unretained test suspension, which is analyzed and calculated as lead, shall not exceed:

- (i) 0.43 milligram for any 90-minute test:
- (ii) 4.8 milligrams for any 4-hour test made at 115 liters (4 cubic feet) per minute: or
- (iii) 6.2 milligrams for any 4-hour test made at 170 liters (6 cubic feet) per minute.
- (e) Dioctyl-phthalate test. (1) All canisters submitted for use with front-mounted and back-mounted gas mask pesticide respirators will be tested in an atmospheric concentration of 100 micrograms of dioctyl-phthalate per liter of air at continuous flow rates of 32 and 85 liters per minute for a test period of 5 to 10 seconds.
- (2) The DOP leakage through the canister shall not exceed 0.03 percent of the ambient DOP concentration.
- (f) Bench tests for pesticide respirators. (1)(i) Bench tests will be made on an apparatus that allows the test atmosphere at 50±5 percent relative humidity and at room temperature (25°±2.5° C.) to enter the canister or cartridge at predetermined concentrations and rates of flow, and that has a means for determining the test life of the canister or cartridge against carbon tetrachloride.
- (ii) Canisters and cartridges will be tested as they are used on each pesticide respirator, either singly or in pairs.
- (iii) Three canisters or cartridges or pairs of cartridges will be removed from containers and tested as received from the applicant.
- (iv) Two canisters, cartridges, or pairs of cartridges will be equilibrated at room temperature by passing 25 percent relative humidity air through them at the following flow rates (expressed as liters per minute (l.p.m.)) for 6 hours:

Type of canister or cartridge	Airflow rate, I.p.m.	
Air-purifying canister	64	
Air-purifying cartridge	25	
Powered air-purifying with tight-fit- ting facepiece	115	
Powered air-purifying with loose- fitting hood or helmet	170	

- (v) Two canisters, cartridges, or pairs of cartridges will be equilibrated at room temperature by passing 85 percent relative humidity air through them at the flow rates stated in paragraph (f)(1)(iv) of this section for 6 hours.
- (vi) The equilibrated canisters or cartridges will be resealed, kept in an upright position at room temperature, and tested within 18 hours.
- (2) Canisters and cartridges tested in accordance with the provisions of this section shall meet the requirements specified in Table 14 of this subpart.

§84.1157 Chemical cartridge respirators with particulate filters; performance requirements; general.

Chemical cartridge respirators with particulate filters and the individual components of each such device shall, as appropriate, meet the following minimum requirements for performance and protection:

- (a) Breathing resistance test. (1)
 Resistance to airflow will be measured in the facepiece, mouthpiece, hood, or helmet of a chemical cartridge respirator mounted on a test fixture with air flowing at a continuous rate of 85 liters per minute, both before and after each test conducted in accordance with paragraphs (d) through (f) of this section.
- (2) The maximum allowable resistance requirements for chemical cartridge respirators are as follows:

MAXIMUM RESISTANCE [mm. water-column height]

Type of chemical cartridge respirator	Inhalation		Exhalation
	Initial	Final 1	LXIIaiaiioii
For gases, vapors, or gases and vapors, and dusts, fumes, and mists	50 50	70 70	20 20

- ¹ Measured at end of service life specified in Table 11 in subpart L of this part.
- (b) Facepiece test. The facepiece test will be conducted as specified in § 84.205.
- (c) Lacquer and enamel mist tests; general. (1) Three respirators with cartridges containing or having attached to them, filters for protection against mists of paints, lacquers, and enamels shall be tested in accordance with the
- provisions of paragraph (f) of this section.
- (2) In addition to the test requirements set forth in paragraph (c)(1) of this section, three such respirators will be tested against each aerosol in accordance with the provisions of paragraphs (d) and (e) of this section.
- (d) *Lacquer mist test.* (1) Temperature in the test chamber will be approximately 25° C.
- (2) Continuous airflow through the respirator will be 32 liters per minute for air-purifying respirators, and not less than 115 liters per minute to tight fitting facepieces and 170 liters per minute to