§ 84.251 Required components.

(a) Each vinyl chloride respirator described in §84.250 shall, where its design requires, contain the following component parts:
   (1) Facepiece;
   (2) Canister with end-of-service-life indicator;
   (3) Cartridge with end-of-service-life indicator;
   (4) Harness;
   (5) Attached blower; and
   (6) Breathing tube.

(b) The components of each vinyl chloride respirator shall meet the minimum construction requirements set forth in Subpart G of this part.

§ 84.252 Gas masks; requirements and tests.

(a) Except for the tests prescribed in §84.126, the minimum requirements and performance tests for gas masks, prescribed in Subpart I of this part, are applicable to vinyl chloride gas masks.

(b) The following bench tests are applicable to canisters designed for use with gas masks for entry into and escape from vinyl chloride atmospheres containing adequate oxygen to support life:

   (1) Four canisters will be equilibrated at 25 ±5 °C by passing 85 ±5 percent relative humidity air through them at 64 liters per minute for six hours.

   (2) The equilibrated canisters will be resealed, kept in an upright position at room temperature, and tested according to paragraphs (b)(3) of this section within 18 hours.

   (3) The canisters equilibrated and stored as described in paragraphs (b)(1) and (2) of this section will be tested on an apparatus that allows the test atmosphere at 85 ±5 percent relative humidity and 25 ±5 °C to enter the canister continuously at a concentration of 25 ppm vinyl chloride monomer at a total flow rate of 64 liters per minute.

   (4) The maximum allowable penetration after six hours of testing according to paragraph (b)(3) of this section shall not exceed 1 ppm vinyl chloride.

   (c) Where canisters are submitted for testing and approval with a service life of more than four hours, the period of time for testing for vinyl chloride penetration will be performed at 150% of the service life specified in the manufacturer’s application. (Example: If a manufacturer requests approval of a respirator for six hours use against exposure to vinyl chloride, the maximum allowable penetration after nine hours of testing shall not exceed 1 ppm vinyl chloride.)

§ 84.253 Chemical-cartridge respirators; requirements and tests.

(a) Except for the tests prescribed in §§84.206 and 84.207, the minimum requirements and performance tests for chemical-cartridge respirators prescribed in Subpart L of this part are applicable to replaceable-cartridge and single-use vinyl chloride chemical-cartridge respirators.

(b) The following bench tests are applicable to cartridges designed for use with chemical-cartridge respirators for entry into and escape from vinyl chloride atmospheres containing adequate oxygen to support life:

   (1) Where two cartridges are used in parallel on a chemical-cartridge respirator, the bench test requirements will apply to the combination rather than the individual cartridges.

   (2) Four cartridges or pairs of cartridges will be equilibrated at 25 ±5 °C by passing 85 ±5 percent relative humidity air through them at 25 liters per minute for six hours.

   (3) The equilibrated cartridges will be resealed, kept in an upright position, at room temperature, and tested according to paragraphs (b)(4) and (b)(5) of this section for other than single-use respirators or according to paragraphs (b)(6) and (b)(7) of this section for single-use respirators within 18 hours.

   (4) The cartridges or pairs of cartridges for other than single-use respirators, equilibrated and stored as described in paragraphs (b)(1), (b)(2), and (b)(3) of this section, will be tested on an apparatus that allows the test atmosphere at 85 ±5 percent relative humidity and 25 ±5 °C, to enter the cartridges or pairs of cartridges continuously at a concentration of 10 ppm vinyl chloride monomer at a total flow rate of 64 liters per minute.

   (5) The maximum allowable penetration after 90 minutes testing of cartridges or pairs of cartridges for other than single-use respirators, according
to paragraph (b)(4) of this section shall not exceed 1 ppm vinyl chloride.

(6) The single-use respirators, equili-
brated and stored as described in para-
graphs (b)(2) and (b)(3) of this section,
will be tested on an apparatus that al-

dows a test atmosphere at 85 ±5 percent
relative humidity and 25 ±5 °C to be cy-
cled through the respirator by a
breathing machine at a concentration
of 10 ppm vinyl chloride monomer at
the rate of 24 respirations per minute
at a minute volume of 40 ±0.6 liters. Air
exhaled through the respirator will be
35 ±2 °C with 94 ±3 percent relative hu-
midity.

(7) The maximum allowable penetra-
tion after 144 minutes testing of res-
pirators, according to paragraph (b)(6)
of this section, shall not exceed 1 ppm
vinyl chloride.

§ 84.254 Powered air-purifying res-
pirators; requirements and tests.

(a) Except for the tests prescribed in
§84.207, the minimum requirements and
performance tests for powered air-puri-
fying respirators prescribed in subpart
L of this part are applicable to vinyl
chloride powered air-purifying respir-
ators.

(b) The following bench tests are ap-
plicable to cartridges designed for use
with powered air-purifying respirators
for entry into and escape from vinyl
chloride atmospheres containing ade-
quate oxygen to support life:

(1) Four cartridges will be equili-
brated at 25 ±°C by passing 85 ±5 per-
cent relative humidity air through
them at 115 liters per minute for tight-
fitting facepieces and 170 liters per
minute for loose-fitting hoods and hel-

mets, for six hours.

(2) The equilibrated cartridges will be
resealed, kept in an upright position at
room temperature and tested according
to paragraph (b)(3) of this section with-
in 18 hours.

(3) The cartridges equilibrated and
stored as described in paragraphs (b)(1)
and (2) of this section will be tested on
an apparatus that allows the test at-
mosphere at 85 ±5 percent relative hu-
midity and 25 ±5 °C to enter the car-
tridge continuously at a concentration
of 25 ppm vinyl chloride monomer at a
total flow rate of 115 liters per minute
for tight-fitting facepieces and 170 li-
ters per minute for loose-fitting hoods
and helmets.

(4) The maximum allowable penetra-
tion after six hours of testing accord-
ing to paragraph (b)(3) of this section
shall not exceed 1 ppm vinyl chloride.

§ 84.255 Requirements for end-of-serv-
ice-life indicator.

(a) Each canister or cartridge sub-
mitted for testing and approval in ac-

cordance with §§84.252, 84.253, and 84.254
shall be equipped with a canister or

cartridge end-of-service-life indicator
which shows a satisfactory indicator
change or other obvious warning before
1 ppm vinyl chloride penetration oc-
curs. The indicator shall show such
change or afford such warning at 80 ±10
percent of the total service life to 1
ppm leakage, as determined by con-
tinuing each test described in
§§84.252(b), 84.253(b), and 84.254(b) until
a 1 ppm leakage of vinyl chloride oc-
curs.

(b) The applicant shall provide suffi-
cient pretest data to verify the per-
formance of the end-of-service-life indi-
cator required in paragraph (a) of this
section.

§ 84.256 Quality control requirements.

(a) In addition to the construction
and performance requirements speci-
fied in §§84.251, 84.252, 84.253, 84.254, and
84.255, the quality control requirements
in paragraphs (b), (c), and (d) of this
section apply to approval of gas masks,
chemical cartridge respirators, and
powered air-purifying respirators for
entry into and escape from vinyl chlo-

ride atmospheres containing adequate
oxygen to support life.

(b) The respirators submitted for ap-
proval as described in paragraph (a) of
this section shall be accompanied by a
complete quality control plan meeting
the requirements of subpart E of this
part.

(c)(1) The applicant shall specify in
the plan that a sufficient number of
samples will be drawn from each bulk
container of sorbent material and that
where activated carbon is used, the fol-

dowing specific tests will be performed:

(i) Apparent density;

(ii) Iodine number;

(iii) Moisture content;